Indian Archaeology

1984-85 - A REVIEW















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Edited by

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PREFACE

I am happy to release *Indian Archaeology 1984-35— A Review* and place it in the hands of readers and scholars. The publication of the Review has been somewhat in arrears. With this volume the gap has been further reduced. I hope we would be soon able to catch up with the arrears and make the publication uptodate.

I gratefully express my indebtedness to all the contributors who have so generously supplied the information with illustrations for this issue.

This publication, as is obvious, is the outcome of the work of several hands. It is the result of the combined efforts of the contributors, compilers and others. It is likely that, inspite of our best efforts and care, some errors and omissions might have crept into the publication. I, on behalf of all the concerned and on my behalf, would like to tender apology. However, the Archaeological Survey of India or I have no responsibility for factual information which is supplied by the contributors.

I thankfully acknowledge the assistance of the members of the Archaeological Survey of India who have helped in many ways in bringing out this volume. I also express my sincere appreciation for the cooperation received from Shri Jagat Pati Joshi, Additional Director General and also Shri K.N. Dikshit, Director Publication, Smt. Shubra Pramanik, Deputy Superintending Archaeologist, Shri K.P. Padhy, Senior Technical Assistant, Shri J.C. Gupta, Production Officer of the Publication Branch of the Archaeological Survey of India, who arduously compiled and have seen the issue through its editing and publication.

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Director General,
Archaeological Survey of India and
Joint Secretary,
Department of Culture

New Delhi
2.11.1987

IN THIS ISSUE

Cover: Excavated remains at Hampi,
District Bellary (Kamataka).

EXPLORATIONS AND EXCAVATIONS

ANDAMAN AND NICOBAR ISLANDS

1. Exploration in Andaman Islands.—Zarina M. Cooper of the Deccan College Post graduate and Research Institute, Pune, carried out an archaeological survey in the Andaman Islands and brought to light thirty-eight shell midden sites. Their distribution is as follows:

Austen Strait	6
Baratang Island	2
Buchanan Island	1
Evergreen Island	3
Interview Island	1
Middle Andaman	2
North Andaman	12
South Andaman	6
Swamp Island	5

These sites marked the original camping places of the prehistoric Andamanese, and besides yielding remains of molluscs, they also consist of animal bones, pottery and stone tools^

The middens were generally situated on an elevation, behind or within the mangrove swamps that fringe the coastline as well as on the banks of creeks and streams. Most of them occurred along the water's edge. The washing away of material was a common factor which indicated recent sea-level fluctuations and changing tides. Land development as well as the extraction of shells from middens for the manufacture of lime caused the rapid destruction of these sites. The average area covered by a midden is 234.02 sq. m while the mean height is 1.60 m.

ANDHRA PRADESH

2. Exploration in District Cuddapah.—D.R.Rajuof the Deccan College Post-graduate and Research Institute, Pune, discovered several palaeolithic sites during the course of his explorations along the rivers Gunjana, Kalletivagu, Penneru and Sagileru.

A stratified Acheulian site was located at the foothills about 150 m to the left of the Siddhavatam-Badvel road facing the fort. The river Penneru is about 1 km east of the site and the town of Siddhavatam, which is also the taluk headquarters situated on the right bank of the river. Fresh, as well as, weathered handaxes, cleavers, cores, polyhedrons, scrapers and flakes made on dark brown quartzite were recovered from the rubble, dug out of 1.5 m deep

trenches meant for the foundation of a local hospital. The vertical sections of the trenches showed three layers. The topmost layer was 25-45 cm and consisted of dark brown loose sandy silt. The layer appeared to represent a historical period. Layer (2) varied in thickness from 35 to 60 cm and had boulders and pebbles in the red loam. Layer (3) was over 60 cm with more or less the same composition as Layer(2) but slightly different in colour of the sediment. Both layers, (2) and (3), yielded Lower Palaeolithic artifacts.

Three Middle Palaeolithic sites were discovered, one each at Vellalavarikandrika, Chcrlo-palli (Kodur taluk) and Brahmamgari Mattam (Badvel taluk). The artifacts consisted of a variety of side-notched and denticulated scrapers, borers, points, cores, flakes and blades made on fine quartzite.

Several find spots of Stone Age sites were noticed around Nandipalli on the right bank of the Sagileru on the Badvel-Mydukur road, 7 km south-west and west of Badvel. Several clusters of the Middle and Upper Palaeolithic and numerous Mcsolithic work stations were noticed. The raw material for the Lower, Middle and Upper Palaeolithic is fine quartzite of various shades and that for the Mesolithic is quartzite.

The Upper Palaeolithic site at Rallachenu was studied during 1976-81 on the basis of its surface material. A lot of fossil bones of *Bos* and *servos* species (especially the upper and lower jaws with many teeth intact) were recovered along with lithic artifacts, potsherds, ash and bones. However, on flourine content analysis, the bones appear to be older than 10,000 years. Consequent upon this finding a small trial trench of 2 x 1 x 1.5m was sunk. The top lm revealed potsherds, ash and charcoal. Below 1 m from the top, the red loam was hard to dig and was completely devoid of potsherds. Between 140 and 160 cm several fresh flakes, blades and cores of fine dark brown quartzite were recovered. This trial trench suggests that the historical habitation was on the abandoned Upper Palaeolithic settlement. As very few open air Upper Palaeolithic sites in India are known to have yielded faunal remains associated with lithics, a systematic large-scale excavation of the site may produce interesting evidence of the terminal pleistocene human habitations on the south-east coast of India.

In the course of explorations thirteen new Upper Palaeolithic find spots have been located both on the valley floor and on the plain surfaces on top of Rapur-velikonda Forest hill ranges ranging from 610 to 915 m above MSL in Kodur and Rajampet taluks. It was very interesting to find evidence of human habitation at such high altitudes.

Majority of the sites in the Valley floor were found stratified and were exposed due to erosion of the top soil. The artifacts in most cases were mint fresh and consisted mostly of blades, flakes (end flakes), cores, scrapers, worked and unworked nodules, chunks and blocks of stone used as raw material.

As the Gunjana valley, which is about 15-20 km west, north-west and south-west of Kalle-tivagu, has revealed several Lower, Middle and Late Upper Palaeolithic sites, a further proper

and systematic study of the Kallctivagu sites and surroundings will reveal the evolutionary trends of the palaeolithic as well as adaptational strategies to varied ecology.

3. Excavation at Vaddamanu, District Guntur.—In continuation of last year's work (*Indian Archaeology 1983-84 - A Review*[1], pp. 2-3), the Birla Archaeological and Cultural Research Institute, Hyderabad, under the direction of T.V.G. Sastri and assisted by M. Kasturi Bai, G.V. Ramakrishna Rao and G. Suryanarayana Rao excavated the remaining portions of VDM III and IV, on the Peddakonda Hill.

The northern slope of the summit yielded the remains of the continuation of the main step-way met within the previous season in VDM II. Its continuation was further traced. Here it was realigned from the earlier steps of Period I and a plastered balustrade was provided during the Period III. The walls of the balustrade were built of bricks. The 'main step-way' was relieved by a platform below, before the ascent starts to the summit. The steps of the branch-way to the Buddhist vihara on the northern terrace below the summit, were reinforced with broken limestone coping stones of the railing, belonging to Period I.

On the north-eastern slope, a stupa of 5 m diameter built later on was noticed. As in the case of structures of Period III, this was raised over the ruins of a structure of Period I. Although it was below the summit, the stupa was centrally located and provided access to all the Buddhist viharas of Period III. Lying on the eastern as well as on the northern terraces, the sizes of its extant bricks tally with those found in the viharas. Moreover, plastering of the walls was typical of this period and could be seen here and there at the base of huge boulders that were exploited to obtain the circular shape of the stupa.

The later stupa mentioned above and the realigned main step-way were paved with Cuddapah slabs. The excavation also yielded Ikshvaku coins, red slipped ware and iron objects which could be attributed to Period III.

On the northern face of the slope of the summit, the excavation in VDM IV has shown the remains of *pradakshinapatha* of the stupa of Period I built over the summit. It was 2.2 m wide and the bricks measured 47 x 27 cm which tallied with those of Period I.

The excavation in the summit area, which yielded the stupa of Period I during the last season, revealed the evidence of smaller railing. The extant remains showed subsequent arrangement of limestone slabs projecting out around the base of the *anda* of Period I. A rectangular decorated limestone frieze showing similar workmanship was found containing a Brahmi inscription in 36 letters (Pl. 1). It showed that the frieze was installed by a resident of Vaddamanu by name Dhamuti, his parents, brothers and younger brother's son (Chula Dhamuti).

The excavation was confined to the top portion of the slope of the eastern terrace on either side of the assembly hall of Period IV. The two regions showed the vestiges of the two elliptical structures located below the stupa on the summit. The bricks of the elliptical structures tallied with the sizes of those found in the stupa of the summit and could be attributed

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This publication is referred to in the following pages. by the year only.

to Period I. A few N.B.P. and black-and-red ware sherds were recovered from layers corresponding to the structures.

Thus during the four seasons (1981-85), the entire mound over the Peddakonda hill was excavated. It yielded four periods of structural activity :

Period I : Post-Mauryan 200 BC - AD 100
Period II : Satavahana AD 100 - AD 250
Period III: Ikshvaku AD 250 - AD 500
Period IV: Vishnukundin AD 500 - AD 600

Of the four periods of occupation, the most spectacular and revealing was the material of Period I. It was earlier believed that Jainism in Andhra was not as early as Buddhism, but the excavation has shown the evidence of Jaina stupas, art traditions and culture, either contemporary or even earlier than Buddhism at Amaravati.

An inscription found on a pillar also refers to the name *Godasa* a disciple of Bhadrabahu, the Jaina saint who travelled through the region of Andhra Pradesh along with the Mauryan king Chandragupta, whose legend is popular even now around the Srisailam hills. Lastly other inscriptions show that the Jaina association of the name of the village, Vaddamanu, is as old as two thousand and two hundred years.

4. Exploration in District Guntur.—G.V. Srinivasarao of the South-eastern Circle of the Archaeological Survey of India[1] in the course of explorations in the Gundlakamma river basin discovered a Neolithic, Megalithic and early historical remains at Gokanakonda in Vinukonda Taluk. At Mulakalura, in the same taluk also yielded polished celts, burnished grey ware, steatite beads, and painted pottery of an early historical period.

5. Exploration in District Krishna.— In the course of village-to-village survey, J. Vara Prasada Rao of South-eastern Circle of the Survey, explored the following sites of archaeological interest:

Taluk	Village/site	Cultural assemblage
Jaggayyapet	Alurupadu	Early historical
-do-	Gangavalle	Early medieval and sculptures
-do-	Gavaravaram	Neolithic, early historical a sculptures of medieval period
-do-	Indugapalle	Megalithic burials and sculptures of medieval period
-do-	Kanneveedu	Early medieval and sculptures
-do-	Mukteswarapuram	Megalithic burials, early historical, sculptures and

[1] **The Archaeological Survey of India is referred to in the following pages as the ' Survey '.**

Taluk	**Village/site**	**Cultural** assemblage
		inscriptions of early medieval period
Jaggayyapet	Pcddamodugapalle	Late medieval and sculptures of medieval period
-do-	Polampalle	Megalithic burials, early medieval, sculptures and bronze image of Narasimha
-do-	Vatsavayi	Megalithic burials and early historical sculptures
-do-	Vedadri	Early historical and late medieval inscription
Tiruvur	Kakarla	Lower Palaeolithic

6. Excavation at Ghantasala, District Krishna.—The South-eastern Circle of the Survey under the guidance of H.N. Singh assisted by D. Hanumantha Rao, M.V.N. Krishna Rao, J. Vara Prasada Rao, T. Chenchuratnam, Sudhir Kumar, Rashid Khan and Ch. Venkateswarlu undertook excavations of a 2 m high mound, known as Yemampadu, at Ghantasala, with a view to know the cultural potentiality of the site. The excavation revealed three cultural periods:

Period I (Satavahana): The characteristic ceramics were burnished black-and-red ware, rouletted ware and burnished red ware. A black-and-red ware fragment of convex sided deep bowl was found inscribed with the first century AD Brahmi characters (P1.2)» which reads *swastika,* as an auspicious beginning of a name *Buddha matasa.* A circular copper coin of Satavahana period was also recovered.

Period II (Ikshvaku) : The period was represented by brick structures, (P1.3), antiquities and pottery. A long brick wall with four to six courses, oriented south-west and north-east directions and measuring 3.6 x 0.55m was exposed to view in Tr. B-l. The structure was perhaps part of a *Chaityagriha.* Another north-south oriented brick-wall, measuring 4.50 x 0.72 m with four to five courses, was exposed to view in Trench A-l. The ceramic industry of this period included burnished red ware, red slipped ware, red ware and coarse black-and-red ware. Amongst important antiquities mention may be made of a limestone *chhatri,* (PI. 4), with a central square hub, ornamented with radiated lines all-round in the interior part and a highly *ornamented Buddha-pada* found in a fragmentary condition. Other minor antiquities included shells, bangle pieces, spindle whorls (?), iron nails, etc.

Period III (Post-Ikshvaku): A square brick structure measuring 2.25 x 2.25 m (interior) and 8.30 x 8.30 m (exterior), with ten extant brick courses was found raised over a high square brick platform with a projection (3.74 x 6.10 m) towards east and an entrance towards north-east. A stucco head of a *Yakshi* was the noteworthy collection of this period. The pottery

consisted mostly of grey ware - with the types such as carinated and globular vases and troughs.

7. Exploration in District Mahbubnagar.— In the course of village-to-village survey, S.V.P. Halakatti of the South-eastern Circle of the Survey explored the following sites:

Taluk	Village/site	Cultural assemblage
Gadwal	Kutukunum	Early historical
-do-	Maldakallu	Medieval
-do-	Medikunda	Medieval
-do-	Upperu	Megalithic
-do-	Venkatapuram	Medieval

8. Exploration in District Nizamabad.- V.G. Sathe of Deccan College Post-graduate and Research Institute, Pune, explored a stretch of the Lower Manjra Valley around Salura. During the exploration he revisited the already known sites and also discovered a few of the Middle Palaeolithic sites which were found in the vicinity of 15 km of the area around the main Manjra stream. These sites are distributed around the nullahs, Peddavagu and Naragivagu, flowing between Khajapur, Hunsa and Mandama and yielded a large number of Middle Palaeolithic tools, containing large cores of prepared and unprepared varieties and various types of scrapers mostly made on chert. Salura yielded a good number of Middle Palaeoliths in a cemented bouldery pebbly gravel of the usual thickness of 2 or 3 m and resting on weathered Archaeans and capped by yellowish brown *Kankary* silt. The faunal collection made at Salura is represented by osteological fragments of various types of medium to small size fossil mammals belonging mostly to *Bos* sp., *Cervus* sp. and a few unidentifiable bone fragments.

9. Exploration in District Prakasam. — D. Hanumantha Rao of South-eastern Circle of the Survey, discovered Megalithic cairn circles at Nagireddipalli in Kanigiri taluk. They are situated at the outskirts of the village on the right side of the road to Chandrasekharapuram. Huge quartzite boulders were used as circle stones while rubbles were utilized for cairn packing.

In the course of village-to-village survey, P. Sitaramamurthy explored the following sites:

Taluk	Village/site	Cultural assemblage
Kandukur	Chennipadu	Early historical
-do-	Cherukuru	Early historical
-do-	Ippagunta	Early historical
-do-	Malepadu	Early historical
-do-	Manginipadu	Neolithic and early historical
-do-	Rallapadu	Early historical

Taluk	Village/site	Cultural assemblage
Kandukur	Ramachandrapuram	Early historical
-do-	Sivannapalcm	Ruined structures of the British period
-do-	Uppalapadu	Early historical
-do-	Venkupalem	Lower and Middle Palaeolithic

10. Excavation at Peddavegi, District West Godavari.— The Excavation Branch (I) of the Survey under the direction of B.P. Bopardikar assisted by S.K. Lekhwani, D.K. Ambastha, S.K. Mitra, J.N. Gandhi, Mohinder Singh, R.K. Roy, M.U. Qureshi, B.K. Rudra and A.U. Ganar carried out excavations at Peddavegi, situated 12 km to the north-north-west of Ellore Taluk. The work was taken up to ascertain the cultural sequence and to reveal the nature of the structures partially visible on the surface.

Peddavegi was historically known as Vengi and is famous as the ancient capital city of the Salankayana, Visnukundin and Eastern Chalukyan dynasties who ruled in this region from the third century to the eleventh century AD. Hieun Tsang.(AD 620-644) mentioned the existence of a stupa built by Asoka at Pink-ki-lo or Ping-ki-pu-lo, i.e. Vengipura, the capital of the neighbouring An-To-Lo, the Andhra country.

The ruins left in the old eroded site are represented, by one or two temples of Late Chalukyan period, loose sculptures, pillars, brick structures, an ancient lake and fortification wall around the village. The centre of the village wherein lies a partly exposed ashlar masonry wall, probably a gateway traceable on surface was undertaken for excavation. The excavation revealed the ashlar stone wall bounded with dry masonry, running in north-south direction to a length of 20.20 m. A stone wall having six courses to a height of 1.10 m was also exposed. The size of dressed stone slabs varied from 85 x 20 x 17 cm, 63 x 25 x 17 cm and 44 x 25 x 17 cm. The ashlar wall has turned at the right angle towards east to a length of 6.10 m. Almost in the centre of the wall facing north, four flight of steps with a crescentic shape of moonstone of burnt bricks with revetting of dressed stone slabs were found. At the north-western comer, above the ashlar wall, the traces of six courses of burnt bricks (measuring to 0.60 m in height) were noticed in a dilapidated condition. These brick courses were perhaps meant to support the filling of the superstructure which consisted of brick bats, stone chips and the black cotton soil.

Two circular structures (probably stupas), 2.20 m apart, from each other, having 4.24 m diameter each, made of curved sandstone supported by dry masonry were exposed.

The ashlar wall running in north-south direction referred above was followed by a separate rectangular brick shrine (3.35 x 2.95 m). It was provided with a sanctum (1.70 x 1.65 m) followed by a vestibule (1 x 0.55 m). In front of the entrance (measuring 0.60 m) was a moonstone (0.50 m radius) made of lime mixed with *kankary* sand. The floor of vestibule was plastered with lime over the rammed riverine rolled *kankar* base to get the smooth surface.

The exterior face of the wall had three offsets in its plinth at different levels. The plinth was also plastered with fine silt and lime mixed with sand. The shrine (PI.5) was provided with a circumambulatory path measuring 0.65 m in width. The shrine was repaired in the past is evident from successive plastering. The massive stone structure was enclosed by burnt brick (approx., 42x27x7 cm) wall. The entrance to the main structure was from the north.

The main pottery was red ware. A few sherds of black and Black-and-red ware were also found from the surface. The pottery types were bowl, cups, sprinklers, etc. besides beads of terracotta and precious stones, bangles of shell and terracotta, terracotta animal and human figurines, iron pieces and some other art objects of the early historical period.

A unique discovery was a camelian Intaglio (2.6 x 2 x 0.4 cm) found near the steps of the stupa. It was oval in shape with plano-convex section. On the plain surface a beautiful female figurine was engraved in a dancing posture with lotus in her right hand. It perhaps represented Tara or Laxmi (Pl. 6).

ASSAM

11. Excavation at Devasthan, District Nowgong.— The Directorate of Archaeology, Govt. of Assam, undertook salvage digging at Devasthan, about 20 km north of Hojai. A cluster of eight mounds was noticed flankinga north-south axis. The digging was preceded by compass-survey and the contouring, of the mounds. Mounds 2 and 3 were taken up for excavation and, as in the case of Na-nath, all these temples were found to be of brick built with Siva *lingas* enshrined in them. But the above mounds did neither reveal any terracotta sculptures nor any carvings on "them.

12. Excavation at Na-nath, District Nowgong.— The Directorate of Archaeology, Govt. of Assam, made a salvage operation at Na-nath, 12 kilometres west of Hojai, a sub-divisional town of the Nowgong district. The Na-nath is a living sanctuary and contains eight mounds.

The salvage work brought to light the joint plinth of the *garbha-griha* and the *mandapa*. Both the chambers were square on plan. On the plinth and a metre above the ground level of this east facing temple existed a register of terracotta sculptures which girdles the *garbha-griha* and the existing portion of the *mandapa*. The sculptures were placed side by side with a moulded pilaster in between them. It was noticed that the back wall, west wall of the *garbha-griha* contained thirty sculptures and the north and south walls twenty-three each. Those on the *mandapa* could not be properly assessed as the plinth did not survive intact. The terra-cottas consisted of a number of subjects such as, trees, animals, birds, mythical figures and scenes from the Krishna episodes. Some of the panels have fallen down and salvaged during exposition while some others were lost. These mounds can tentatively be assigned to fourteenth-fifteenth century AD.

13. Exploration in District Sonitpur.- The eastern portion of the Sonitpur district, bounded by Bhutan in the north, the Brahmaputra in the south and the river Jia-Bharali in the

west, was explored by the Directorate of Archaeology, Govt. of Assam. The area, however, revealed enough evidence to show that it was occupied during the medieval and the late-medieval periods.

Nandikeswar is a small village, about four kilometres west of Jamuguri, a mofussil town on the National Highway. It contains a small temple, 6.90 metres in height. The temple is built of ashlar masonry up to its springing level and the *sikhara* is built in bricks. It is *pancha-ratha* in plan and contains a stone door-frame at its entrance. The components of the frame are plain except the *lalata bimba* of the lintel which contains a full-blown flat lotus.

The Burha-Madhav ruins lie in the midst of the Pratapgar Tea Estate and is seven kilometers north-west of sub-divisional town of Biswanath-Chariali. The site of the above ruin lies about two kilometres north of the National Highway. It contains a modem sanctuary. The old ruins here lie scattered all-around the modem temple. It is clear from the present condition of ruins that during the erection of the modem temple with its spacious *namghar* (prayer hall), the site of the old temple was completely covered and the few components which lay around were removed there to make room for the newly built temple structures.

BIHAR

14. Excavation at Taradih, District Gaya.— In continuation of last season's work *(1983-84,* pp. 12-13), the Directorate of Archaeology and Museums, Government of Bihar, under Ajit Kumar Prasad assisted by K.N. Singh, L.P. Singh, U.S. Pandit, Parvez Akhtar, D.P. Gupta, S. Ranjan, R.S. Singh, Md. Sharfuddin and L.B. Mishra resumed excavation at Taradih Mound, under the general guidance of Sita Ram Roy and Naseem Akhtar. The main objectives of this year's operation were to ascertain the details of the Neolithic level and subsistence pattern of Chalcolithic people; to spot out the brick-built monastic complex of the Pala period, and to determine their different structural phases.

In the course of excavation, a pre-chalcolithic horizon, completely devoid of metal and black-and-red ware, was encountered for the first time. The cultural deposit of the period was akin to those of Period I of Chirand.

Period I was represented by 60 cm thick cultural deposit of the neolithic complex accumulated on the natural soil. The discovery of burnt-clay chunks with reed impression obviously indicated that the people lived in houses of wattle-and-daub.

The pottery was mainly handmade, although examples produced by turn-table were not altogether unknown. The handmade pottery was represented by both burnished red and grey wares as well as plain red ware, of which a good number of cord-impressed sherds deserve special mention. Besides, a few examples of slipped red ware were also met with. The red ware had varied colours, such as chocolate, deep red, light red, purple, orange red and so on.

The main pottery types included vase with flared and narrow mouths, *handi* with out-turned rim, ring based bowl, perforated bowl, deep bowl, cups with hollow ring base, cup with solid stand, knobbed lid, storage jar, miniature pot, etc.

A few burnished grey ware pieces bore post-firing ochre paintings on their rim and pro-

file. Some sherds were decorated with linear incision, while larger pots, like storage jars, were decorated with thumbnail, rope and impressed designs. Some of the unbumished sherds bore irregular scratches.

A few ovens of different shapes and dimensions were noticed in the period under review. The larger ovens were probably meant for community kitchen, as numerous charred animal bones with hewn marks were collected from inside the ovens.

The notable lithic antiquities of the period included celt, microlithic blade, core and beads in number, while ball and hammer were represented singly. The important bone objects were arrowhead, point, disc, etc. The worth mentioning terracotta finds included a ball and an archaic animal figurine.

The Period II was represented by the cultural remains of the Chalcolithic complex. The pottery of the period, in general, was wheel-made and better fired in comparison to those of the preceding one. But the ceramic specimens of hand-made pottery though in less frequency, still continued. The black-and-red ware made its appearance in the period under review. Not a single cord-impressed potsherd was encountered at this level.

The main pottery types in black-and-red, black and red wares included vase, dish-on-stand, cup-on-stand, lipped bowl with globular body, outcurved and featureless rim, perforated bowl, ring-based bowl, dish with incurved or straight sided rim, small vase, small to medium sized jar, etc. A few sherds bearing white painting in the form of lines, oblique strokes and dots were also found.

Of the terracotta objects, special mention may be made of beads which outnumber other objects of the same material. The stone beads, microlithic blades and neolithic celts were also important finds of the period. A few beads of bone were also picked up from this level alongwith a copper bangle.

Period III was distinguished by the appearance of iron. The quality and fabric of black-and-red, black and red wares had been improved considerably during this period. These were made of well-lavigated clay. The core of these specimen did not show the presence of any paddy husks or coarser ingredients as was the case with its counterparts in the preceding period. Only sherds of larger pots, such as storage jars, showed the evidence of paddy husks and coarser ingredients in their cores. The noteworthy ceramic shapes included dish-on-stand, vase, *handi* with or without rim, storage jar, bowl, basin, lid-cum-bowl, etc. A few sherds of black-and-red ware having graffiti marks were also encountered.

The worthwhile associated finds included beads of stone, balls, earlobes and pendants of terracotta, arrowheads, pins, stylus and points of bone, celts of stone, iron objects and a few lumps of iron slag.

Period IV was marked by the advent of the N.B.P. Ware. The black-and-red ware still continued, though in less frequency. The important types included dish with sharp carination at waist, vase of out-turned rim and out-curved beaded rim, bowl with everted rim, bowl with horizontally splayed out rim, basin with beaded rim, lipped basin, lid-cum-bowl, bowl with thickened flat base, etc.

Amongst important antiquities of terracotta mention may be made of bead, earlobe, pendant, bangle, human and animal figurines, etc. Whereas the objects of bone included bangle, points, arrowhead, etc. The noteworthy objects of copper were finger-ring, ball, cast coins, bead, etc. The other objects included finger-ring, nail of iron and celts of stone.

Period V was represented by the red ware of Kushan period such as *surahi,* frying pan with handle, flat based bowl, etc. Amongst the noteworthy objects mention may be made of beads of both terracotta and semi-precious stone.

Period VI was distinguished by the appearance of antiquities of the Gupta and Late Gupta periods. The notable objects were broken votive stupa of stone, bead, bangles and gamesmen of terracotta and semi-precious stones, etc. A few terracotta seals and sealings bearing Brahmi script of late Gupta period were also collected.

Period VII was marked by the burnt-brick wall, drain rammed and well-plastered floor, probably of a monastic complex belonging to the Pala period. The corresponding stratigraphy of the structural activities of the period showed at least four phases. The important finds of the period were a stone head of a Bodhisatva (Pl. 7), panel of a thousand Buddha and votive stupas, beads of both terracotta and stone. A good number of terracotta seals and sealings of different shapes and sizes were also picked up which showed the legend in Pala-Brahmi characters.

15. Excavation at Maner, District Patna.-The Department of Ancient Indian History and Archaeology, Patna University, carried out trial excavation at Maner about 32 km west of Patna. The work was directed jointly by B. Narayan and A.K. Singh assisted by J.P. Singh, R.N. Singh and P.K. Bose under the over-all supervision of B. Sahai.

The main objective of this year's excavation was to unravel the cultural sequence of the site. Earlier exploration *(1965-66,* p.9) of the high mounds overlooking the old bed of the river Son just to the north of Maner village had brought to light black-and-red ware sherds including stems of dish-on-stand, microlithic cores and blades of chalcolithic vintage as well as a good number of N.B.P. sherds and other associated wares, terracotta animal figurines, stone beads, etc. Two trenches measuring 6 x 4 m, were laid out on the western end of the high mound a little to the north of the village Maner.

Excavation revealed three cultural periods. Period-I is mainly represented by layer (7) which is composed of a compact yellowish brown soil and its average thickness ranged around 0.93 and 1.00 m. The potteries obtained from this layer included black-and-red ware, red ware and some pieces of black ware. The characteristic shapes in black-and-red ware comprised of bowls and dishes and a number of stems of dish-on-stand type. The antiquities associated with pottery included microlithic core and blade, terracotta balls and stock beads. The presence of a number of stems of dish-on-stand type together with the numerous coarse variety of black and red ware sherds, microlithic core and blade are suggestive of the chalcolithic cultural content of this phase.

Period II at the site belongs to the N.B.P. phase and is represented by four layers from (6) to (3), and the thickness of the entire deposit is around 3.74 m. The layer (6) is

characterized by less compact grey soil, while layer (5) is composed of ash colour soil with a brownish tinge. The layer (4) is represented by dark ashy soil mixed with potsherds. The layer (3) is divisible into (3A) and (3), which are respectively characterized by yellowish brown soil and yellowish compact soil mixed with brickbats. The N.B.P. and its associated wares such as black slipped, black-and-red, grey and red wares were obtained from all these layers, though the black slipped ware showed greater frequency in relation to these wares. A portion of a brick wall consisting of four courses of bricks had been noticed in the upper level of the period and it was sealed by layer (3). The notable finds (PI.8) from layer (6) and (5) included a few iron implements, terracotta and stone beads, terracotta dabber, stone ball, stone-quern, etc., while the layers (4) and (3) yielded a number of iron weapons and implements such as spear, points, dagger, knife, chisel, iron nail, etc. terracotta female and animal figurine with punched designs, conical object, pestle and gamesman, decorated weight, wheel and seal and copper bangles.

Period III at the site belongs to the post-N.B.P. phase ascribed to the Pala period. The period in question is marked by a brick structure consisting of a wall running from north to south in the eastern portion of the trench with ten courses of bricks still *in situ.* The foundation of the wall rests over layer (3), but its two arms occurring at right angles run parallel from east to west and show the plan of two rooms. Associated with this structure is a brick drain measuring 1.00 m in length and 23 cm width. The drain was found running from east to west just close to the north-western side of the wall. The above structural complex is sealed by layer (2) which has yielded, in addition to an inscribed terracotta sealing bearing letters in Pala-Brahmi characters, a number of terracotta and stone beads, bone points and bangle, terracotta seal and conical objects, copper antimony rod, carved stone figurines, terracotta monkey head and some iron objects including a circular iron piece with perforation. The topmost layer below the humus had yielded mixed materials of different periods as well as a number of green glazed sherds of the medieval period.

16. Excavation at Manjhi, District Saran.— In continuation of last season's work *(1983-84,* pp. 15-16), the Banaras Hindu University, under the direction of T.N. Roy, resumed excavation at Manjhi, a centrally protected site. The main objective of this year's excavation was to find out the details of Periods I and II, i.e. of pre-N.B.P. and N.B.P. levels, respectively.

The excavation revealed that Period I having an average occupational deposit of about two metres above the natural soil, belongs to black slipped ware culture. It is characterized by black slipped ware, black-and-red ware and associated red ware. Of these, the black slipped ware being the principal ceramic industry of the period, was dominated by bowls and dishes. Amongst the bowl, the shapes available were the sub-ovaloid, carinated, straight sided, hemispherical, convex sided and round sided. The black-and-red ware was marked by the presence of bowls with everted rim, platters and dish-on-stand. The antiquities recovered from this period were large number of pottery dishes, a terracotta bead and a waste chip of stone and bone points. Remnants of earth with reed impression indicated that the hutments during this period were constructed of wattle-and-daub. The use of copper and stone tools, being the

justification of the chalcolithic appellation were not fully attested. Iron was also not recorded from the lowest levels, but it was found from the middle strata. In the later levels this period distinctively overlapped with the early Phase of the N.B.P. Period (Sub-period II A).

In the Late Phase of the N.B.P. Period (Sub-period II C), but not in its early and middle sub-periods, evidence of town planning with a baked brick fortification, moat, roads, houses of baked bricks, terracotta ring wells ,etc. could be ascertained. A unique road running south-north direction and laid almost in the middle of the township was also exposed. The road was made of small brick-bats, gritty materials, sherds, clay and lime concretions heavily pounded.

After the end of N.B.P. Period, the occupation at Manjhi continued in the Saka-Kushana level. Several fragmentary baked brick walls of this period (Period III), were encountered, but no regular house plan could be located.

GOA, DAMAN AND DIU

17. Exploration at Usgaon, Goa.— B.R. Mani assisted by K.P.S. Bhadoria of the South western Circle of the Survey, noticed seven temples of Late medieval period in mostly ruined conditions in the Usgaon village in Ponda taluk, including one mentioned as Adinatha temple by Rui Gomes Pereira in his book *'Goa Hindu Temples and Deities'* (Panaji, 1978). Seventeen loose sculptures of Surya, Ganapati, *Siva-linga, nandi,* hero-stone and also those of *Gramadevatas* and other deities such as Gaja-lakshmi, Amba, Bhumika, Vatala, Balio-Purusha, mentioned in the above work were found lying in and around the temples.

GUJARAT

18. Exploration in Districts Banaskantha, Bharuch, Bhavanagar, **Kutch and** Mahesana.— The Department of Archaeology, Government of Gujarat explored the following sites of archaeological interest :

District	**Taluk**	Village/sites	**Cultural** assemblage
Banaskantha	Disa	Akhol Moti	Medieval
-do-	-do-	Akhol Nani	Late medieval
Bharuch	Vagra	Gandhar	Medieval
Bhavanagar	Gadhada	Bodaki	Early historical and medieval
-do-	-do-	Ghogha Samdi	Medieval
-do-	-do-	Haripur	Medieval
-do-	-do-	Juni Mengani	Early historical and medieval
-do-	-do-	Khijadiya	Medieval
-do-	-do-	Makwana Timbo Tatana	Late Harappan and early historical
-do-	-do-	Orio Tombo Chiroda	Late Harappan

District	Taluk	Village/site	Cultural assemblage
Bhavanagar	Gadhada	Raniono Timbo	Harappan and early
		Iswaria	historical
-do-	-do-	Rojmal	Medieval
-do-	-do-	Sakhapar Mota	Early historical
-do-	-do-	Vav no timbo	Early historical and medieval
		Zinzavadar	
Kutch	Bhachau	Shobharel	Medieval
Mahesana	Vijapur	Bhimnath	Solanki
		Harnahoda	
-do-	-do-	Hanuman Timbo	Solan ki
		Vihar	
-do-	Visnagar	Thalota	Late medieval

19. Exploration at Dholavira, District Kutch. — R.S. Bisht of the Excavation Branch (V) of the Survey, assisted by B.R. Meena, R.S. Kulkami, Y.S. Rawat, M.G. Vyas and V.H. Parmar, re-examined the known Indus ruins of Dholavira *(1967-68,* p. 17) and observed new and significant features of planning hitherto unreported. The site presents a perfect example of rectangular town planning. Three well-defined complexes, an acropolis, a middle town and a lower town—all set in a large fortification provided with gateways at regular intervals were observed. Interestingly, a wide open space with several walls lying across at several strategic points runs all around between the fortification walls and the built-up areas. More significantly, the acropolis and the middle town have been found to be further furnished with their own defence-work, gateways, built-up areas and open spaces. The ancient mound, locally known as Kotada lies one kilometre north-north-west of village Dholavira in Bhachau taluk. It is spread over an area of about 4 lakh sq. m.

The acropolis complex occupies the largest area in the settlement and runs from east to west and is collateral to the middle town on the north. Inside, there majestically stands the towering castle which measures about 140 m east-west and 130 m north-south and registers a height of 16 m approximately. It is surrounded on all four sides by formidable double ramparts faced with stone walls from both sides.

In order to give access to the raised interior, each side of the ramparts is pierced through by an impressive gateway provided by a flight of steps with a possible provision of a door as indicated by large blocks of bright yellow stone containing a socket in the centre of each. Besides, there are long blocks of the same rock which might have been the members of the door-sill. Such stones have been found, at least, at the middle height of the northern and western gateways. On the west, a further emwalled court at a much lower level adjoins the castles. In addition, ancillary structures may be seen to the east of the castle as well as on the other side of the northern open area.

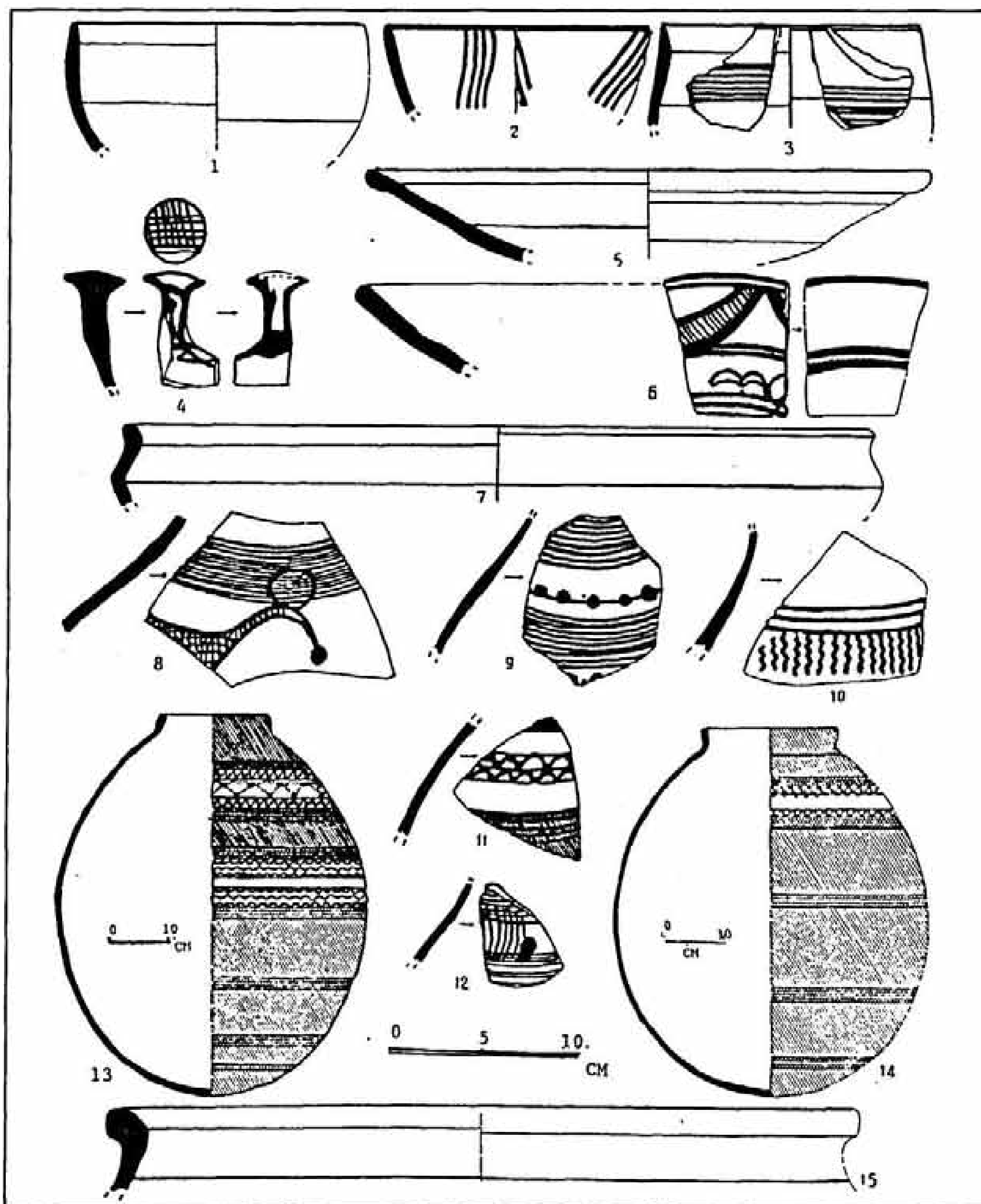


Fig. 1. Ratanpura: Red ware 1-15. *See page 17.*

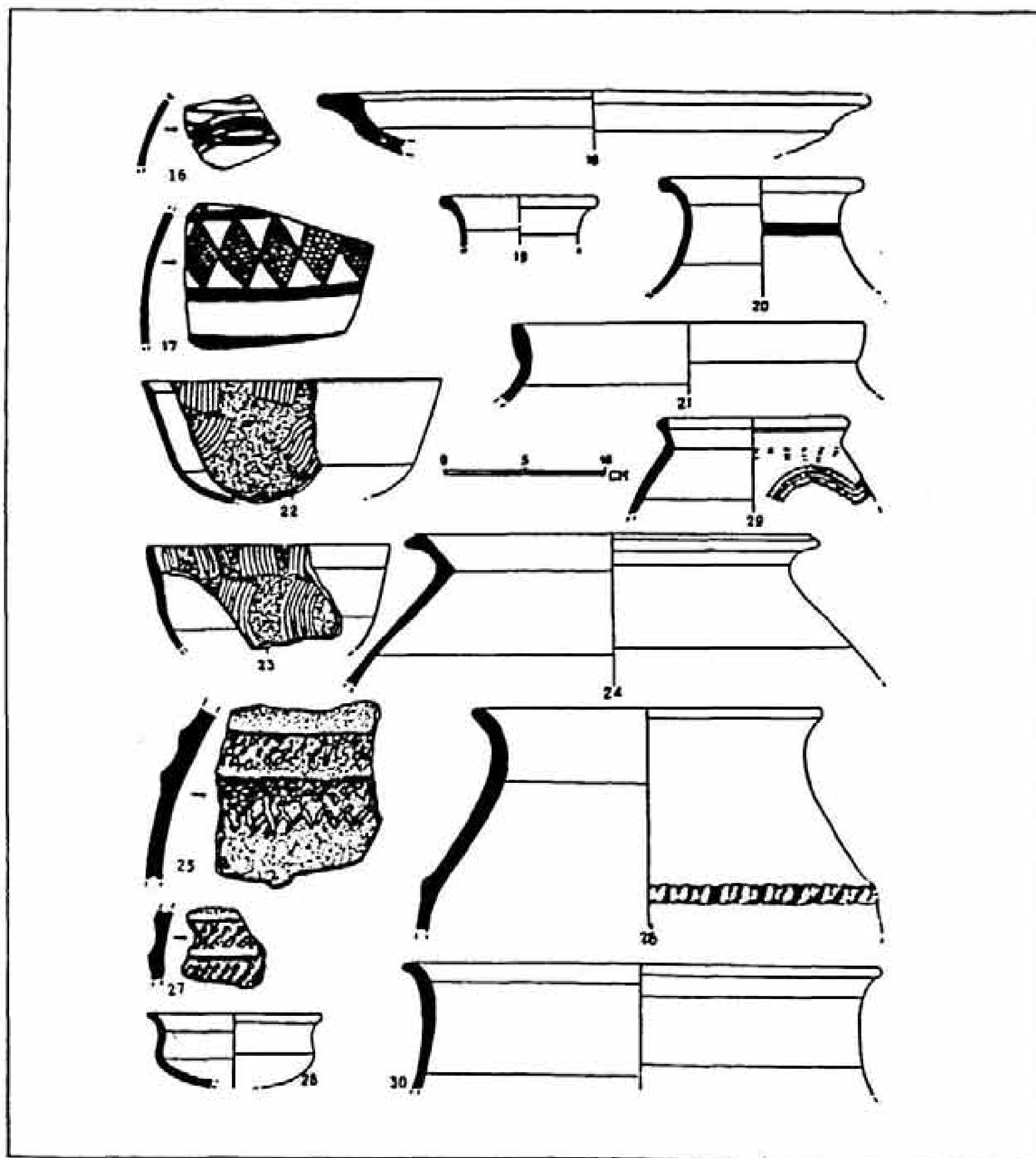


Fig. 2. Ratanpura: Buff ware 16-17, chocolate slipped ware 18-19, lustrous red ware 20-21, fine quality white painted black and red ware 22-23, coarse black and red ware 24-25, coarse red ware 26-27, coarse grey ware 28-30. *See page 17.*

The embattled middle town measures about 360 m east-west and 180 m north-south with a rise of about 10 m. The lower town with open areas on the north, east and south lies to the cast. Its built-up area configurates like a bold C with its opening towards the south.

There arc evidences of houses made of stones, streets, private drains and wells in all the three divisions of the town. The mature Harappan objects including the white-painted black-and-red ware of the late phase have been found lying all over.

Furthermore, the site has yielded a number of later grave-structures of various shapes and sizes scattered all over the settlement as well as outside. In construction, those are very close to the megalithic tombs of South India. There are caim circles, sometimes showing cists and circles, ovals or octagons lined with stones.

20. Excavation at Ratanpura, District Mahesana.— K.T.M. Hegde assisted by V.H. Sonawane, V.S. Parckh, K.K. Bhan and Ajit Prasad of the Department of Archaeology and Ancient History of the M.S. University of Baroda, carried out an excavation at Ratanpura (23° 28' N. 71° 48' E.) about 5 km to the south of Shankheswar in Sami taluk. The site at Ratanpura is one of the twenty-one Late Harappan settlements found clustered together in the estuary of the Rupen river in 1983 *(1982-83,* p. 28). It is located at about one kilometre to the south of Ratanpura village, on the edge of an inter dune depression, near the crest of a relict sand dune, formed close to the northern bank of the Rupen river. It included four mounds of which I and II were found to be rich in Late Harappan debris, III was heavily littered with bone fragments and microliths and IV, located on the river bank, was marked by a number of circular ashy pits and numerous terracotta lumps. As the site was not much disturbed by agricultural operations it held out the promise of revealing : (1) characteristic features of the cultural equipments of the Late Harappan communities who immigrated into the north-western part of the mainland of Gujarat, (2) evidence of their contact with the indigenous hunter gatherer Mesolithic communities, (3) evidence of their cultural transformation and (4) evidence of economic and environmental factors contributing towards this transformation.

The entire site was put under 10 sq. m grid and phosphate content of the soil samples collected from alternate squares was estimated to determine the relative intensity of human activity In different parts of the site. Using the phosphate data and the exploration record of the site, twelve trenches were cut, one each in mounds I and III, seven in II and three in IV.

The excavation in mound II revealed 85 to 95 cm thick cultural deposit of a single culture whose material relics could be broadly compared with those of Rangpur II C phase. Among the pottery recovered in the excavation were the distinctive fabrics such as Harappan plain and painted sturdy red ware and buff ware, Late Harappan lustrous red ware, white painted and plain black and red ware and coarse grey and red ware (Figs. 1 and 2). This is the first site to yield black and red ware sherds in substantial quantities in the Harappan context. It occurs in fine, medium and coarse fabrics. Among the structures unearthed in the excavation were a number of rammed earth floors of circular huts with U-shaped *chullah* of mud, built on the floor. There were also a number of pestle-stones and saddle querns. Among the ornaments recovered were beads of camelian, steatite, paste, shell and terracotta.

A trench cut into mound III yielded a large quantity of bone fragments together with a number of Mesolithic tools such as fluted cores and flakes of chert and chalcedony. This trench did not yield any pottery.

An interesting contribution of Ratanpura excavation is the clear indication of the purpose for which terracotta lumps were intended. The excavation at mound IV brought to light three circular pits, 2.70 m in diameter and 0.90 m in depth, dug into hard indurated clayey alluvium, with an earthern lamp and a post-hole at the bottom and filled in with ash, charcoal, charred and uncharred bone pieces, pottery, fragments of three varieties of terracotta sealings and literally hundreds of terracotta lumps of many shapes. Since these pits appeared like ceremonial structures, baulks were retained in north-south and east-west directions to see if it would be possible to discern : (1) the direction from which the ritual materials were put into the pits and, (2) the manner in which the pits were filled in-whether in stages at intervals of time or in one occasion. The oblique filling patterns as revealed in the east-west baulk in trench I, suggest that the materials were put into the pit to begin with from the west and later on from the east. The pit was filled up in one occasion. Examination of bone pieces recovered from the pits will reveal the identification of animals selected for the ritual offering and the cut marks on the bones are likely to indicate the manner in which they were offered. Some of the terracotta lumps recovered from the pits bear a thread mark. It is possible that this mark is associated with certain aspects of the ritual.

21. Excavation at Rojdi, District Rajkot.—In continuation of last year's work *(1983-84* pp. 19-23) the Department of Archaeology, Government of Gujarat, and a team from the University Museum, University of Pennsylvania, carried out excavation at Rojdi. Work on the south extension of the site enlarged the initial exposure made last year. This led to the discovery of an architectural level preceding the major occupation dating to the middle of the second millennium BC. Typical Rangpur IIB/C pottery was also recovered.

Excavation of the main mound yielded evidence of two periods of occupation during the Post-urban Phase. However, virgin soil was not reached and it is anticipated that one or more occupation levels underlie the bottom of the present soundings.

22. Exploration in District Surat.— During the course of his exploration under village-to-village survey scheme, Vilas Jadhav of the Western Circle of the Survey brought to light the following sites of archaeological interest:

District	Taluk-	Village/site	Cultural assemblage
Surat	Bardoli	Sarbhon	Step-wells *circa* seventeenth-eighteenth century AD
-do-	Chorasi	Katargam	Images of Siva and Parvati of medieval period
-do-	-do-	Nana Varachha	Sculptures of Vishnu and

District	Taluk	Village/site	Cultural assemblage
			Uma-maheswara.
Surat	Chorasi	Rander	Sculpture of Ganesa
-do-	-do-	Variaov	Medieval temple
-do-	-do-	Vednana	Step-well (*circa* seventeenth-eighteenth century AD)

23. Exploration in District Surendranagar.— K.T.M. Hegde, V.H. Sonawane and Ajit Prasad of the Department of Archaeology and Ancient History of the M.S. University of Baroda, further carried out a systematic village-to-village exploration of an area bounded by 23° 20' - 23° 25' N and 71° 35' - 71° 50' E in the Rupen river estuary in Dasada taluk of the district. The present exploration brought to light the following sites :

Taluk	Village/site	Extent of mound	Cultural assemblage
Dasada	Dhama	150x100m	Medieval
-do-	Fathepura	400x200 m	Late Harappan
-do-	Nagwada	600x200 m	Medieval
-do-	-do-	350x300 m	Late Harappan
-do-	Rasulabad	300x250m	Medieval
-do-	Rustamgadh	200x150m	Late Harappan
-do-	Vadgam	500x400 m	Medieval
-do-	Visavadi	100x100m	Medieval

24. Excavation at Goraj (Mahadeopura), District Vadodara.— In continuation of the previous year's work *(1983-84,* pp. 23-24), B.M. Pande and R.D. Singh assisted by Narayan Vyas, K.V. Rao, R. Pathak, Vilas Jadhav, V.L. Sonar, M.D. Puranik, N.A. Saiyed, A.R. Shah, Narendra Soni and S. Sarangdharan, resumed excavation of Goraj with a view to further exposing the plinth of a brick temple and other structures partly unearthed earlier.

The excavation at Goraj brought to light a plinth of a large brick-built structure with a compound wall (Pl. 9). It was found in a damaged condition. The plinth of the temple is made of moulded burnt bricks some of them have simple decoration. The upper courses of decorated bricks are of triangular shape below which are the mouldings comprising *kalasa, antarpatta, kumbhak* and *khura*. On the eastern side of the plinth was exposed a big sized *chandrasila* made of a single stone. On the basis of the *chandrasila,* the temple faces east having 32.80 m length of the plinth.

While digging at the lower part of the plinth near the *khura* a copper ring (seal?) bearing five Brahmi letters *OM JAGESAR* in *circa* second century AD character was found. A small

silver coin of Kumargupta in Western Kshatrapa style was also found in between the *Kalasa* and *Jadyakumbha.*

To find out further extension of the temple towards cast, a small trench of 2 x 2 m was laid out in front of the exposed brick plinth and was excavated up to 1.50 m from the surface. It was reported by the villagers that there was a big sized *nandi* buried in and the same was removed after excavation by the villagers and placed in front of the modem Siva temple. To know the actual place of *nandi* and *nandimandapa,* the small trench was laid. The digging brought to light a damaged brick floor and part of a brick structure with four courses which may perhaps be a part of a pedestal of the big sized *nandi*

At the south and west-side of the mound where the plinth was exposed, a brick compound wall having seventeen courses was exposed measuring 29 m in length, 1.20 m in height and 75 to 80 cm in width. The part of the compound wall at both the sides is missing. The wall is running parallel to the temple plinth at both the directions. The pottery recovered was plain red, micaceous red and buff ware, fragments of a big handmade jar, etc. Some sherds of red polished ware were also found.

The other finds from the excavation included terracotta beads, bangles, iron objects, miniature broken plaques of Ganesa, Vishnu, Mahisasuramardini, etc. Iron nails were also found from the excavation indicating the possibility of a wooden superstructure. The size of bricks used in the construction of the plinth is 44 x 25 x 7 cm, 41 x 26 x 7 cm, 41 x 26 x 6 cm, 41 x 27 x 6 cm and 43 x 26 x 7 cm. On the basis of the brick size, pottery, terracotta bead, iron objects and other antiquities, the site is datable from second-third century AD to fourteenth-fifteenth century AD.

HARYANA

25. Excavation at Balu, District Jind.—U.V. Singh, and Suraj Bhan, assisted by SB. Singh, S.P. Shukla and Arun Kesarwani of the Department of Ancient Indian History, Culture and Archaeology, Kurukshetra University, resumed excavation at Balu to ascertain the northern wall of the Harappan fortification. In all, eight trenches were laid on the northern periphery of the mound.

The inner side of the fortification wall was exposed in Trench I, Ext. 6 with six courses of mud-bricks (size 11x22x44 cm) having 75 cm height. A contemporary parallel structure, exposed in the last season's dig, was found extending and separated from the fortification wall by a 2.50 m wide lane. The digs in the lane revealed three phases of levelling. The width of the fortification wall could not be ascertained in the trenches excavated during this season. It was exposed to a width of 13.30 m (Trenches I, Ext. 6-8). The Trenches J, Ext. 7 and 8, showed a damage on the outside of the wall. The damaged portion also revealed the fortification wall preserved to a height of 95 cm with nine courses of bricks laid in header and stretcher style. The trenches L , Ext. 8, M, Ext. 7 and M, Ext. 8 laid to expose the north-eastern comer of the fortification wall, revealed considerable damage. The bricks were found disintegrated in this part.

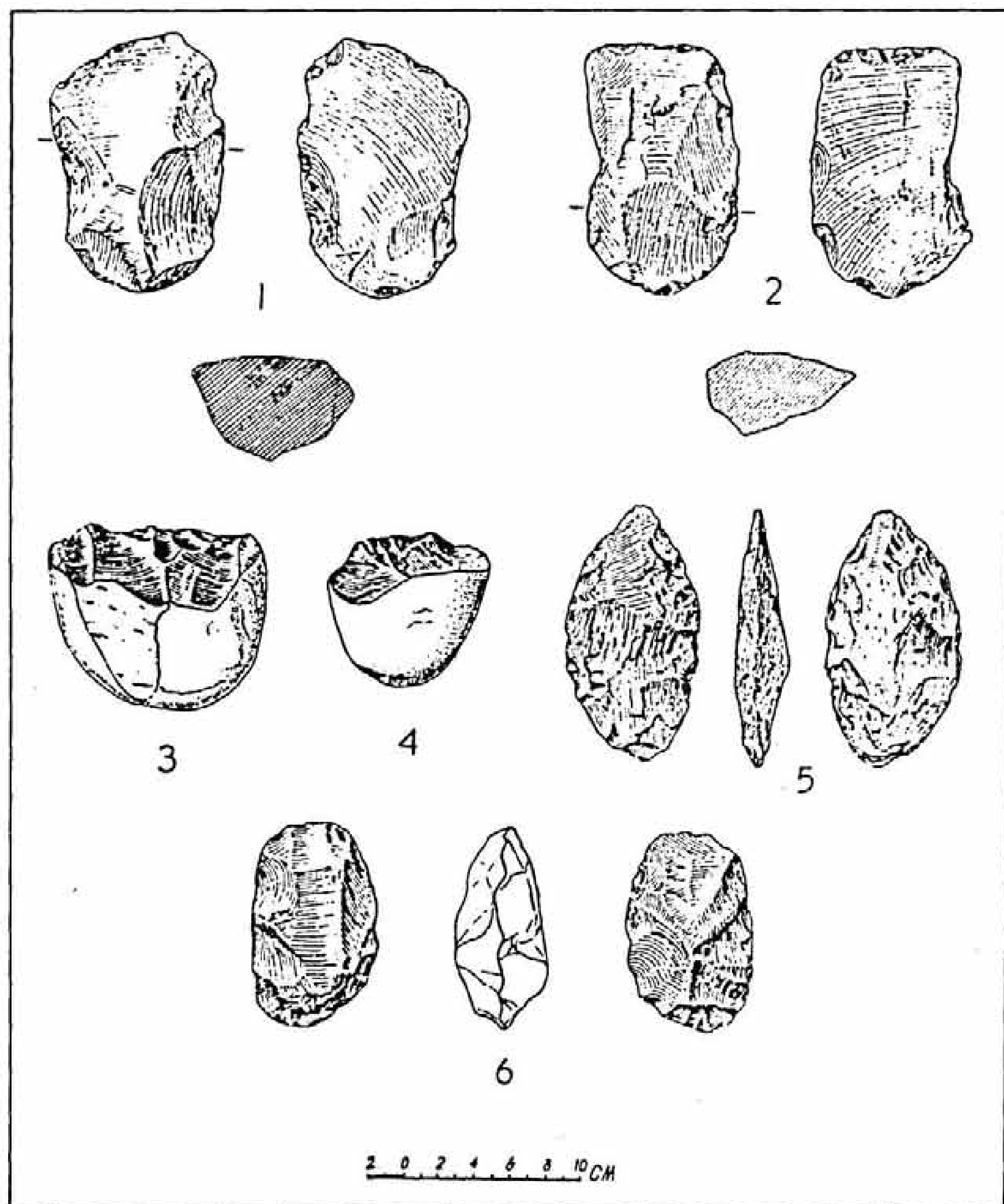


Fig. 3. Panjasaran: Early Stone Age tools. *See page 22.*

The excavated trenches yielded the pottery of the Harappan and Late Harappan phases. The pottery of the late phase was recovered from the upper levels. Various types of antiquities-beads of terracotta, steatite, stone and faience; bangles, balls, cakes and nodules, and one bull figurine of terracotta; pins and points of bone were recovered in the excavation.

HLMACHAL PRADESH

26. Exploration in District Kangra.—S.S. Gupta, Jitendranath, J.S. Dubey and N.K. Nimje of the Prehistory Branch, Nagpur, and A.K. Patel of the North-western Circle of the Survey, Srinagar, under the guidance of K.D.Banerjee, carried out explorations in District Kangra to assess the prehistoric potentiality of the region.

Explorations have been conducted along the rivers Banganga and Beas. The rivers have formed five and three terraces respectively. The earlier reported sites located on these terraces include Nandrul, Kuparlahr, Guler, Dibbar, Jakkar, Sunneta, Dera Gopipur, Nadauna, Bari, Maleta, Beughta and Sirha. The sites have yielded stones on their surface. These stones contain natural flaking on their edges which is caused by attrition among them. Consequently, they show a resemblance with the unifacial and bifacial choppers of Early Stone Age.

Exploration was further extended to Nurpur and Dhameta along the Sukhar-di-khad, Parauli-di-khad, Hawri-di-khad, Bagroli-di-khad and Fatehpur-di-khad.

Number of Early Stone Age tools comprising of a late Acheulean handaxe, cleavers, scrapers, flakes, unifacial and bifacial choppers have been found at Panjasaran (PI. 10, Fig.3). It is located on the bank of Sukhar-di-khad and 10 km west of Jasur village which lies on the Nurpur-Jawali road. The finding of a late Acheulean handaxe is noteworthy. It had not been found in earlier explorations so far from Himachal Pradesh in general and Banganga and Beas valleys in particular. The site was first reported by R.V. Joshi.

An Early Stone Age site has been discovered at Barot ('32°8 15-X 75° 55' 30" E). It is located on the bank of Parauli-di-khad, 22 km south of Nurpur. Early Stone Age tools comprising of unificial and bifacial choppers have been found here from the cultivated land.

27. Exploration in District Kangra.- A.K. Patel of the North-western Circle of the Survey, in the course of the village-to-village survey discovered the following sites in Nurpur Tehsil:

Tehsil	Village/site	Cultural assemblage
Nurpur	Ban(Fatehpur)	Late medieval pottery
-do-	Chauki	Late medieval pottery and stone structures
-do-	Fatehpur	Late medieval pottery, temple and graves
-do-	Jakhar	Late medieval pottery
-do-	Jat	Late medieval pottery
-do-	Paraul	Late medieval pottery

JAMMU AND KASHMIR

28. Exploration in Districts Badgam and Baramula. With the objective of identifying the ancient routes to Kashmir, S.N. Jaiswal of the North-western Circle of the Survey, under the problem-oriented Survey, explored the region from Narbal (spelt, as *Narbai* in Survey of India) in District Badgam to Pattan in District Baramula. The sites yielding antiquarian remains with their cultural assemblages arc as follows:

District	Tehsil	Village/site	Cultural assemblage
Badgam	Biru	Gagharpur	Late medieval pottery, Ziarat of Abban Shah said to be about 300 years old
-do-	-do-	Narbai	Ziarat of Saiyad Swalia Shah Bukhari said to be about 500 years old
Baramula	Pattan	Gotipur (Karandar)	Late medieval
-do-	-do-	Khor	Neolithic and late medieval
-do-	-do-	Malamu	Late medieval and stone architectural members perhaps of stone temple
-do-	-do-	Naular	Late medieval
-do-	-do-	Pattan	Neolithic and late medieval

29. Exploration at Tarakpora, District Baramula.— In the course of exploration the Directorate of Archives, Archaeology and Museums, Government of Jammu and Kashmir, discovered two polished stone axes of the neolithic period at Tarakpora. The axes were abnormally long, polished, ground pecked and have unifacially levelled cutting edges. These large sized axes must have been used for digging besides serving as hoes for cultivation.

30. Exploration in District Jammu. — K.C. Nauriyal of the North-western Circle of the Survey in the course of the village-to-village Survey, along the rivers Tawi and Aik, in Tehsil Nawan Shahr of District Jammu, discovered the following sites:

Tehsil	Village/site	Cultural assemblage
Nawan Shahr	Abdal	Kushana, early and late medieval along with Brickbats.
-do-	Bhulowal	Kushana, Gupta, early and late medieval and iron slags
-do-	Bidipur	Early and late medieval and iron slag
-do-	Devigarh .	Kushana, Gupta, early and late medieval
-do-	Ghirana	Kushana, Gupta, early and late medieval pottery along with brickbat and iron slags.

Tehsil	Village/site	Cultural assemblage
Nawan Shahr	Gulabgarh	Early and late medieval
-do-	Jaora	Kushana, Gupta, early and late medieval and iron slags
-do-	Kapurpur	Early and late medieval
-do-	Nawanshahr	Nineteenth century temple and water reservoir
-do-	Sai Khurd	Kushana, Gupta, early medieval terracotta objects brickbats and iron slags
-do-	Satowali	Kushana (?) Early and late medieval brickbats and iron slags
-do-	Satrain	Kushana, Gupta, early and late medieval brick-bats and iron slags
-do-	Suchetgarh	Kushana, Gupta, early and late medieval brick-bats and iron slags

31. Exploration at Jammu, District Jammu. - R.K. Ganjoo, a research scholar of Deccan College Post-graduate and Research Institute, Pune, reported his observations on Geomorphology and Palaeontology of the area around Jammu (1981-82, pp. 18-19 and, 1982-1983, pp 31-32). In the month of April 1985 S.N. Rajaguru, G.L.Badam and R.K. Ganjoo examined this area particularly with a view to correlate the terrace morphology of the rivers Tawi and Chenab with Palaeolithic tools reported earlier by scholars of the Punjab University, Chandigarh and the Survey. Various sites around Jammu,Viz. Puramandal, Uttarvani, Bahu, Nagrota, Akhnoor, Katra, Udhampur, etc., were investigated in more detail. This led to bring forth a few significant features of the Quaternary history of the area.

The present investigations of the valley revealed that the present course of the river Tawi is due to the drainage integration which is a Late Pleistocene event, and therefore the terraces on river Tawi are not helpful in establishing a correlation with glacial advances and retreats. The river Chenab, beyond doubt, is an antecedent river and the terraces on it are the result of upliftment during the late Pleistocene period but with no proper correlation with glaciation.

KARNATAKA

32. Exploration in District Belgaum.—S.K. Joshi of the Mid-southern Circle of the Survey explored the following sites:

Taluk	Village/site	Cultural assemblage
Soundatti	Alladakalli	Middle Palaeolithic
-do-	Haralakatti	Middle Palaeolithic

Taluk	**Village/Site**	**Cultural** assemblage
Soundatti	Hooli	Middle Palaeolithic
-do-	Hosur	Ruined Kalmesvara temple *(circa* twelfth-thirteenth century AD)
-do-	Hulikatti	Middle Palaeolithic
-do-	Ingalgi	Ruined Siva temple (eleventh-twelfth century AD)
-do-	Manoli	Megalithic, Temple *(circa* tenth-eleventh century AD), inscriptions (tenth-eleventh century AD) and Medieval fort *(circa* fifteenth century AD)
-do-	Naviletirtha	Megalithic
-do-	Parasagod	Megalithic
-do-	Rudrapur	Ruined Siva temple and Fort (Medieval period)
-do-	Sirsangi	Middle Palaeolithic,Temples of Hebbesvara and Kalamma *(circa* fifteenth century AD),Inscriptions (tenth-eleventh century AD),and Fort (tenth-eleventh century AD)
-do	Sogala	Somesvara temple *(circa* eleventh century AD)
-do-	Soundatti	Middle Palaeolithic, Temple of Puradhisvara and Jaina *basti {circa* ninth-tenth century AD), Forts and Inscriptions *(circa* tenth century AD)
-do-	Tallur	Fort *(circa* eleventh century AD)
-do-	Yaragatti	Middle Palaeolithic

33. Exploration in District Bellary.— The Directorate of Archaeology and Museums, Govt. of Kamataka, carried out exploration in Hampi region and located several rock paintings near Virupaksha Bazar and Venkatapura having human and animal figures.

34. Excavation at Hampi> District Bellary.— In continuation of the previous year's *(1983-84,* pp. 37-39) work, the Hampi National Project of the Survey, under the direction of B. Narasimhaiah, assisted by K.P. Poonacha, R. Venkata Siva Sarma, M. Loganathan, T.P. Balakrishna Unnithan, V.N. Joshi and J. Ranganath resumed excavation with the objective of understand-

ing the plan of the eastern block of the citadel (Royal Enclosure) by exposing structures further east of the five huge platforms exposed earlier towards the south of King's Audience Hall.

The excavation conducted in an area of 3,500 square m revealed a number of structures including remains of three more huge platforms (STR 1-3), a unique stepped tank (STR-4) and a row of short granite pillars, which supported the western arm of the stone aqueduct line to feed a brick veneered tank exposed earlier (STR-6 of *1983-84,* p.37).

The plinths of three rectangular platforms representing large pillared halls (STR 1-3), built of granite members and oriented north-east by south-west are similar in construction to *adhisthana* of a temple. The veneering course of the basement of STR-1 and STR-2 are well-dressed and decorated with a common motif of *kudu* arches, whereas in STR-3 a later addition in the layout, they are comparatively massive, undressed and found devoid of decoration.

Major portions of the plinth of all the three platforms were found heavily disturbed due to faulty foundation and also due to vandalism. The undisturbed portions of the plinth encountered at various places revealed a uniform method of construction, i.e. after levelling the undulated surface with rubble and earth-filling a rough bedding course was provided over which rested two moulded courses intervened by a vertical one. The filling material used inside the core of the platforms consisted of rubble and earth besides a series of pillar bases either rectangular or square on plan provided right from the bottom level of the core of the platform to carry heavy superstructures.

STR-1 measured 67.0x8.9 m with a height of 1.10 m. Four rows of granite pillar bases of varying dimensions were provided in the platform suggesting that the hall had been divided into three bays, each measuring 1.90 m in width. It was noticed that originally this platform measured 60 m (north-south) but was subsequently extended further towards the north to a length of 7 m. An entrance was provided near the northern end consisting of two steps, each measuring 30 cm in height, 40 cm in width and 1.60 m in length. STR-2 was almost a prototype of STR-1 in so far as the pattern of layout and construction is concerned but it measures only 90 cm in height. The STR-3 measured 60.20x8.75 m with a height of 1.20 m.

Two passages measuring 4 m and 3 m in width separated STR-1 and 2 and STR-2 and 3 respectively. The former passage accommodated a supply channel and a small storage tank abutting the western face of STR-3 which was fed by the western arm of the main aqueduct line fronting the northern end of these three platforms.

The tank, at a distance of 40.2 m from the northern end of STR-3, measured 2.00 x 1.65m and is cut into the natural disintegrated rock to a depth of 3.10 m. It was observed that whereever necessary, the crevices had been filled with rubble set in mud-mortar. The supply channel and the outlet channel (for draining excess water from the tank provided on the opposite side), built of undressed stones set in mud-mortar measure 60 cm in width. The interiors of the tank and the channels had been well-plastered.

The western arm of the main aqueduct line exposed during this season is evident by fourteen short granite pillars arranged in almost south-east and north-west orientation with

gradient towards north-west. The maximum and minimum heights of pillars from the ground measure 1 m and 70 cm, respectively. Two bits of stone-scooped channel that once stood on these pillars have a depth of 45 cm and the interior was found plastered with lime.

It is a noteworthy feature that whenever structural expansion took place within the Royal Enclosure earlier structures in the vicinity were either dismantled and their members reused or they became part and parcel of the newly built structures as in the case of a cyclopcan wall which was probably an earlier enclosure wall, the remains of which were encountered in the core of the STR-3. The extant portion of the wall measured 60 m in length, 1.2 m in height and 90 cm in width.

STR-4, exposed at a distance of 15 m towards east of STR-3, is a large and unique stepped tank of its kind found so far in Hampi. Built of well-dressed basalt blocks, 22 m in square on plan and 7 m in depth, is oriented north-east by south-west. The tank built in stepped order is provided with five landings, each projecting to a width of 1.05 m approximately. The lowest projecting surface of the stones used for landing are decorated with simple mouldings.

The five landings of the tank made four inner squares varying in measurement from 19.80 m (being the maximum at the second landing) to 6.10 m (being the minimum at the last landing) and each square accommodates ornamental steps (PI. 11). On all the four sides there are nine such pyramidal steps each between first and second stage, five steps each between third and fourth stage and three steps each between the fourth and fifth stage. The steps occupying the central line jut out and look prominent on all the four sides and are decorated with a series of offsets at the comer giving an ornamental look to the entire layout. Each step of the central line on an average measures 36 cm in width and seems to have been under constant use.

The central pit of the tank measuring 2.45 m in depth is veneered with eleven courses being arranged one above the other to form a series of offsets. Corresponding to each offset is provided ten narrow steps each from all the four sides rising in stepped pyramidal order from bottom upwards. The projecting ends of each step, used as landing to climb and descend as the case may be, measured 25 cm in width and 45 cm in length. The square bottom of the tank measuring 4.47 m is paved with rectangular granite slabs over a 30 cm thick deposit of sand probably to filter the perennial spring water coming from below. The topmost landing is disturbed at many places and a few courses are missing. The tank was encompassed by a parapet with lime plastered pathway around rising to a height of 45 cm from the rear end of the uppermost landing, as evidenced by a portion of coping members found intact near its western entrance.

It is interesting to note that the whole layout of this stepped tank is prefabricated. After excavation of a huge pit in stepped order, it is veneered with finished architectural members of basalt probably brought directly from the manufacturing centre. This view is corroborated by the fact that every member of the tank contains a small inscription or mason mark indicating the exact location of the member, direction and the row to which it belongs. The letters indicating the direction arc in old Kannada-Telugu characters.

A number of mutilated sculptures (Pis. 12-13) of medium size were found in the stepped tank during the excavation. Among the religous images mention may be made of a beautifully carved Venugopala in *tribhanga* with his flute missing, a four handed male deity seated in *padmasana* and seated *Yaksha.* Bracket figures of both male and female dancers depicted in various postures decorated with heavy ornamentation arc some of the noteworthy secular sculptures. The two male figurines in the collection are shown wearing typical costume, profuse ornamentation and heavy hairdress representing probably royal personages/donors are of interest. A few architectural members were also retrieved from the excavation of which portion of a door jamb depicting a lady standing in *tribhanga* is outstanding. Except one granite sculpture of a dancer of Vijayanagara style, the remaining sculptures are made on soapstone all stylistically assignable to the late Chalukyan period. Antiquities made on various other media were also found during the excavation.

Among the miniature sculptures mention may be made of the seated Ganesa, *nandi* and a bust of Venugopala. Curious triangular shaped plaques of soapstone depicting Sakti, Ganesa, Veerabhadra and a person shown seated on a horse carved in low relief represent Vijayanagara style of workmanship. It is inferred from the size of the plaques and also perforations at the top that they were objects of household worship.

The other miniature stone objects include *Siva-linga* made on soapstone and rock crystal and a variety of knobs and lids (Pl. 14). Human and animal figurines made on stucco (Pl. 15) and terracotta were also recovered. Other important finds encountered in the excavation are beads of terracotta and stone; copper objects including coin, rings, a part of finial besides a miniature seated *nandi* ; iron nail, javelin head and door hinge; and an ivory comb.

The ceramic industry is represented by the occurrence of plain and decorated medieval black and red wares, few of them burnished. Occurrence of solitary stone dish is noteworthy. Chinese porcelain sherds, one of them having a Chinese letter at the base, were also found.

35. Excavation at Hampi, District Bellary. — In continuation of last year's work *(1983-84,* pp. 35-37), the Department of Archaeology and Museums, Government of Kamataka, resumed excavation at Hampi under the supervision of A. Sundara, assisted by Balasubramanya and C.S. Patil in the area described as Nobleman's Palace. The excavation of Noblemen's Palace 3,4 and 4A, started last year, have been completed and the palaces 4B, 5, 6 and 7 were taken up during the year.

Nobleman's Palace 4B : This small structure facing east is situated to the south of the Palace 4. The interior of the structure has two floor levels. The front portions of the lower floor level is partially disturbed. The upper floor level is aproached by steps. Tank to the south-east of the palace was also exposed.

Nobleman's Palace 5 : Located to the south of the palace 3, it has two floor levels. The lower floor level is reached by a flight of steps at the centre and the upper level is reached by two flights of steps at the rear comers of the lower floor level. The steps at the south-west comer is flanked by a stucco *jali* balustrade on the open side.

Nobleman's Palace 6 : The structure facing east has two floor levels. Courtyard is on the

lower floor level. The upper floor level is approached by a flight of steps at the north-east comer and a square depression is in the centre. There arc three rooms on the southern side and a niche on the northern side.

Nobleman's Palace 7 : The main structure consisted of a large courtyard, a central room and two side rooms and a water-tank and a big room on the north-east. The structure is surrounded by an enclosure wall.

36. Exploration in District Bidar.— S.G. Samak and B.S. Aparanji of the Department of Archaeology and Museums, Government of Kamataka, in the course of village-to-village survey, located the following sites of archaeological interest:

District	Taluk	Village	Cultural assemblage
Bidar	Bidar	Anduru	Early historical and medieval
-do-	-do-	Bapur	Neolithic, early historical grey ware and red ware
-do-	-do-	Chatnalli	Megalithic burial with cairn circle
-do-	-do-	Kamthan	Early historical and medieval
-do-	-do-	Khadwad	Neolithic, early historical grey ware, red ware and burnished red ware
-do-	-do-	Ranjolkini	Sculpture of Saptamatrika and Yogi Narasimha
-do-	-do-	Sikathanalli	Megalithic Caim circle
-do-	-do-	Sirsi	Neolithic and Early historical
-do-	Humanabad	Atwal	Sculptural remains.
-do-	-do-	Banahalli	Temple (eleventh century AD)
-do-	-do-	Dhakulgi	Sculptural remains
-do-	-do-	Dumansoor	Sculptures of Surya, hero-stone and Mahadev Temple (eleventh-twelfth century AD)
-do-	-do-	Hallikhed	Sculptural remains
-do-	-do-	Hillalpur	Saptamatrika Panels
-do-	-do-	Humanbad	Virabhadra Temple
-do-	-do-	Hunesgere	Sculptural remains (eleventh-twelfth century)
-do-	-do-	Jalasangi	Palaeolithic site, Mahadev temple of later Chalukya period
-do-	-do-	Kodambal	Hero-stones of sixteenth-seventeenth century AD

District	**Taluk**	**Village**	**Cultural assemblage**
Bidar	Humanbad	Kopparagaon	Sculptural remains
-do-	-do-	Madargi	Malkan temple datable to Kalyana Chalukya period
-do-	-do-	Mannakhelli	Sculptural remains
-do-	-do-	Markal	Hero-stones
-do-	-do-	Mudnal	Virabhadra Temple of fifteenth-sixteenth century AD
-do-	-do-	Nande Gaon	Remains of Virabhadra Temple and hero-stone
-do-	-do-	Nirana	Sculptural remains
-do-	-do-	Saidapur	Sculptural remains
-do-	-do-	Sedol	Mound of Satavahana Period, and Hanuman Temple datable to eleventh-twelfth century AD
-do-	-do-	Udamanalli	Remains of Venkatram Temple datable to thirteenth-fourteenth century AD
-do-	-do-	Udbal	Remains of Mallikarjuna Temple of Kalyan-Chalukya period
-do-	-do-	Warwatti	*Sati* and hero stones

37. Exploration in Baichbal Valley, District Gulbarga. — In continuation of his work pertaining to a U.G.C. sponsored research project, K. Paddayya of the Deccan College Post-graduate and Research Institute, Pune, undertook further systematic explorations and trial excavation in the Baichbal valley. An area of about 50 square km lying in the north-western part of the valley was thoroughly explored. New Acheulian localities were discovered at Baichbal (locality I), Agtirth (localities III to V), Yediyapur (localities I and II), Kudalagi (localities I and II), Yedihalli (locality II), Madnur (localities XI to XIII), Baichbal and Fatehpur (localities II to IX). All these were primary sites taking the form of distinct clusters of artifacts, debitage, raw material blocks and, in some cases, even animal fossils. They vary in extent from 30 to 120 m across. The trial excavation revealed that the Acheulian horizon occurred as a thin (10 to 15 cm) level either on bedrock or on *kankary* brownish soil. At some places the Acheulian horizon was found to be overlain by 30 to 40 cm thick black soil. While limestone forms the major raw material at some localities, other rocks like schist, dolerite, sandstone, etc. were commonly employed at other sites. Cleavers of different shapes, handaxes, picks, points, knives and chopping tools constitute the major types of assemblages. The artifacts belonging to the assemblages found on bedrock seem to belong to an early facies of the Acheulian, and were characterized by crude workmanship and large size. As against these, the collections from the

horizon overlying brownish soil arc smaller in size and show better workmanship. Another interesting feature of the Achculian sites noted this year was the concentration of about one dozen localities in a stretch of about 4 km along the Fatehpur *nullah.*

In order to understand the intra-site distribution of cultural items, one of the localities of the Fatehpur complex (locality IX A) was taken up for detailed plotting. It measured 60 x 50 m and was divided into one-metre grids. Over 300 artifacts, debitage, numerous raw materials and 15 animal fossils were plotted. Trial pits dug at different points showed that the Achculian level rests directly on rock and was covered by 15 to 20 cm thick black soil.

In addition to the Achculian sites, Middle Palaeolithic sites at Fatehpur-1 and Mudnur-4, and Mcsolithic sites at Yedihalli and Yediapur were also discovered. The Middle Palaeolithic sites yielded scrapers, points and other types of artifacts of brownish chert, while whitish chert was found to be the main raw material of the Mesolithic assemblages.

38. Excavation at Hoysalesware Temple Complex, Halebidu, District Hassan. — The Mid-southern Circle of the Survey, under the direction of B. Narasimhaiah and B.S. Nayal, assisted by C. Krishnamurthy, G.S. Narasimhan, C.B. Patil, M.V. Mallikarjuna, G. Krishnamurthy and Joseph, carried out excavation in the area adjacent to the Dwarasamudra tank and to the east of Hoysalesware temple where the moulded stones of a plinth of a temple had been noticed while carrying out gardening operations by the Horticulture Branch of the Survey. The excavation revealed the remains of a twin temple extant only up to *urdhava-padma* moulding, re presented in plan by two *garbha-grihas* and a common *mahamandapa.* The temple faced east, and the northern side of the *mahamandapa* and northern *garbha-griha* were disturbed. In front of the *mahamandapa,* remains of a flight of steps and an elephant figure, forming a part of elephant balustrade were exposed. The *garbha-grihas* measure 5 m square and have a number of offsets. The southern side of the *mahamandapa* measured 7 m. The remains of another temple facing west and having a sanctum and a *mandapa* were also encountered in the area north-east of the above mentioned complex. This was extant up to the *adhisthana* portion and has all the five usual mouldings. The northern wall of the sanctum (3 x 4m) was provided with a stone-cut channel leading to a stone trough resembling a *yonipeetha* which in turn projects into the southern arm of a 2m square water tank of stone masonry (Pl. 16). This had one more channel extending on its western arm probably leading from a different structure. This was provided for the flow of *abhisekha* water. One more water tank of stone masonry measuring 2m square was exposed to the west of this temple. To the south of this temple, a stepped platform with five courses in diminishing order and having a square socket at the top was exposed. To the north of this stepped platform an inscribed hero-stone consisting of three panels was dis covered. The inscription mentions the name of the king Vishnuvardhana and Narasimha I of Hoysala dynasty. Therefore it can be presumed that this temple complex was earlier to the construction of the Hoysaleswara temple and belongs to the Hoysala period between eleventh and twelfth century AD.

39. Exploration in District Kolar.— In continuation of last year's work *(1983-84,* pp.

40-42), G.S. Narasimhan of the Mid-southern Circle of the Survey, explored and discovered the following sites:

Taluk	**Village/site**	**Cultural assemblage**
Kolar	Bichagondanahalli	Chaudesvari temple enshrining Saptamatrikas *(circa* ninth century AD)
-do-	Chanjamale	Megalithic habitation-cum-burial site (stone circle-type)
-do-	Dodda Aiyur	Megalithic burials of stone circle type and Chaudesvari temple housing Saptamatri-kas *(circa* tenth century AD) Neolithic site
-do-	Guttahalli	at the foot of the hill yielding burnished red and grey ware and Megalithic burial site of Stone circle and cairn circle types Hero-stones *(circa* seventeenth century AD)
-do-	Kakinatta	Megalithic habitation site yielding black
-do-	Kajikallahalli	ware, red ware and black-red ware Hero-stones *(circa* sixteenth century AD) Group
-do-	Kittandur	of Hero-stones (eleventh-twelfth century
-do-	Kurki	AD)
-do-	Madden	Megalithic burials of stone circle type and Saptamatrika group of sculptures *(circa* tenth century AD)
-do-	Madnahalli	Group of Hero-stones *(circa* eleventh-twelfth century AD) Historical site
-do-	Malyapanahalli	yielding predominantly red ware
-do-	Manchandahalli	Siva temple *(circa* tenth century AD), Saptamatrikas housed in the above temple *(circa* tenth century AD) and Hero-stones *(circa* tenth century AD)
-do-	Maseediyapalya	Virabhadra temple *(circa* tenth century AD) Megalithic site of stone circle type
-do-	Nandamballi	Megalithic habitation site Megalithic
-do-	Patna	burials of stone circle type Historical site
-do-	Tyavanahalli	yielding red ware Megalithic burials of
-do-	Uratagrahara	stone circle type and Hero-stones *(circa*
-do-	Velagalaburra	tenth-fifteenth century AD)

Taluk	**Village/site**	**Cultural** assemblage
Kolar	Venkatapura	Neolithic-cum-Megalithic site with rock shelters
Mulbagal	Ammanallur	Rama temple (*circa* seventeenth century AD)
-do-	Guraganjigurke	Megalithic burials of stone circle type and hero-stones (*circa* sixteenth century AD)
-do-	Hanumantapur	Anjaneya temple (fifteenth century AD)
-do-	Kadaripur	Narasimha temple (*circa* fifteenth century AD) and hero-stone (*circa* fifteenth century AD)
-do-	Shettibenakanahalli	Inscribed hero-stone (*circa* fifteenth century AD) and Gopalakrishna temple (seventeenth century AD)
-do-	Siti	Temples of Sripatsivara and Kala-bhairava (*circa* eleventh-twelfth century AD)
-do-	Somesvarapalya	Somesvara temple (*circa* eleventh-twelfth century AD) Gopalkrishna temple (*circa* seventeenth century AD) hero-stones (*circa* eleventh century AD) and Inscriptions (*circa* sixteenth-seventeenth century AD)
-do-	Sonvadi	
-do-	Sulidenahalli	
-do-	Virupakshi-Guttahalli	Somesvara temple (*circa* fourteenth century AD)
-do-	Vittalapura	Inscriptions (*circa* fifteenth century AD), hero-stones (*circa* fifteenth century AD) and sculpture of Ganesa
-do-	Yanadi Gollanalli	Anjaneya temple (*circa* sixteenth century AD)

40. Exploration in District North Kanara.— S.K. Potnis of the Department of Archaeology and Museums, Government of Kamataka carried out explorations under the scheme of village-to-village survey. The following sites have been explored which are as under:

Taluk	Village	Antiquarian remains
Mundgod	Ajjihalli	Sculptural remains
-do-	Andalgi	Sculptural remains
-do-	Balehalli	Ramalingesvar temple datable to eleventh-twelfth century AD
-do-	Chalageri	Hero- stones
-do-	Chaudalli	Sculptural remains and hero-stones
-do-	Gotagadi	Sculptural remains
-do-	Gungavati	Sculptural remains
-do-	Hanumapura	Sculptural remains
-do-	Hosakoppa	Ruins of temple and inscribed hero-stones datable to sixteenth-seventeenth century AD
-do-	Hungund	Sculptural Temains datable to twelfth century AD
-do-	Indur	Architectural pieces of temple
-do-	Engalaki	Sculptural remains
-do-	Koppa (Indur)	Temple of eleventh-twelfth century AD
-do-	Kurli	Architectural pieces datable to fifteenth-sixteenth century AD
-do-	Kyasinakera	Ruins of Isvara temple
-do-	Lakkolli	Sculptural and architectural pieces of tenth-eleventh century AD
-do-	Mainalli	Ruins of temple
-do-	Malegi	Sculptural remains of tenth to twelfth century AD
-do-	Manavelli	Hero-stones
-do-	Mundegod	Ruins of a fort and temple of seventeenth-eighteenth century AD
-do-	Naganoor	Hero-stones
-do-	Nandikatti	Basavanna temple datable to eleventh-twelfth century AD
-do-	Oralgi	Sculptural remains of seventeenth-eighteenth century AD
-do-	Pala	Sculptural remains of sixteenth-seventeenth century AD
-do-	Salagaum	Sculptural remains of sixteenth-seventeenth century AD
-do-	Shidla Gundi	Sculptural remains
-do-	Singanahalli	Sculptural remains

41. Exploration in Supa Taluk, District North Kanara.— K.G. Bhatsoori of the Department of Archaeology and Museums, Government of Kamataka, carried out exploration in Supa taluk. The following sites of archaeological interest have been located:

Taluk	Village	Antiquarian remains
Supa	Aurali	Somesvar temple and sculptural remains of fifteenth-sixteenth century AD
-do-	Chinchichanda	Gopal-Krishna temple of sixteenth century and Isvara temple of sixteenth-seventeenth century AD
-do-	Ganeshgudi	Sculptural remains of sixteenth century AD
-do-	Gund	Sculptural remains of eleventh-twelfth century AD
-do-	Joida	Hero- and *sati stones* datable to sixteenth-seventeenth century AD
-do-	Kateli	Sculptural remains of sixteenth-seventeenth century AD
-do-	Kumbali	Sculptural remains of sixteenth-seventeenth century AD
-do-	Panjeli	Sculptural remains
-do-	Ram Nagar	Sculptural remains
-do-	Sithawad	Sculptural remains
-do-	Ulavi	Temple of Late Medieval period

42. Exploration in District North Kanara.— In continuation of last year's work *(1983-84,* pp. 46-47) S.S. Nayak of the Mid-southern Circle of the survey located the following sites of archaeological interest:

Taluk	Village/Site	Cultural assemblage
Ankola	Balehalli	Ruined temple *(circa* thirteenth Century AD) and Inscriptions *(circa* thirteenth century AD)
-do-	Bhedasgoan	Siva temple *(circa* thirteenth century AD)
-do-	Bhikanahalli	Ruined Siva temple *(circa* fifteenth century AD)
-do-	Dekopa	Inscribed *Sati* stone
-do-	Gunjavati	Ruined temple of Kalmesvara *(circa* twelfth century AD), Inscribed Hero-stones *(circa* twelfth century AD) and Inscriptions

Taluk	Village/Site	Cultural assemblage
		[*circa* twelfth century AD) Inscriptions {*circa* twelfth century AD)
Ankola	Halasinkop	Inscribed hero-stones {*circa* twelfth century AD)
-do-	Hungund	Parswanatha Basti {*circa* twelfth century AD) and Virabhadra temple
-do--	Indur	Inscriptions {*circa* fourteenth century AD) and Kalmesvara temple (fourteenth century AD)
do-	Kop	Ruined Siva temple {*circa* fourteenth century AD), Inscribed hero-stones {*circa* fourteenth century AD) Inscription {*circa* twelfth century AD) and Siva temple {*circa* thir-teenth century AD)
-do-	Nandikatti	Siva temple with inscriptions {*circa* twelfth century AD)
Sirsi	Advalli	Siva temple {*circa* fifteenth century AD) and inscribed hero-stones sculptures
-do--	Agsal	Ganesa temple with loose sculptures {*circa* sixteenth century AD)
do-	Bakkala	Ramalingesvara temple with sculptures of Mahishamardhini, Kartikeya, Narayana, Surya, Durga, Saptamatrika {*circa* fifteenth century AD)
-do-	Balekop	Ruined temple {*circa* fifteenth century AD) and
-do-	Balvalli	Inscribed hero-stones
-do-	Bhairumbe	Temples of Somesvara and Tamesvara {*circa* sixteenth century AD) Ruined Siva Temple {*circa* sixteenth century AD) and Inscriptions {*circa* sixteenth century AD)
-do-	Devimane	Inscribed hero-stones {*circa* fifteenth century AD)

Taluk	**Village/Site**	**Cultural** assemblage
Sirsi	Hebballi	Ruined temple *(circa* seventeenth century AD) and Ruined temple with sculptures of Mahishasuramardhini, Saptamatrikas, Vishnu *(circa* seventeenth century AD)
-do-	Heggar	Inscribed Hero-stones *(circa* fourteenth century AD)
-do-	Hosur	Inscribed Hero-stone *(circa* fifteenth century AD)
-do-	Hostot Huttagi	Inscribed Hero-stones *(circa* fourteenth century AD)
-do-	Hosotota	Inscribed Hero-stones and *sati* stone *(circa* fourteenth century AD)
-do-	Hulekal	Lakshmi-Narayana temple *(circa* fifteenth century AD) and Inscriptions *(circa* twelfth century AD)
-do-	Hulgol	Loose sculpture of Mahishasuramardhini Saptamatrika, *(circa* twelfth century AD)
-do-	Islur	Ruined Siva temple *(circa* ninth-tenth century AD), Short pillar inscription *(circa* ninth-tenth century AD) and Inscribed Hero-stone *(circa* fourteenth century AD)
-do-	Jodguni	Inscriptions (seventeenth century AD)
-do-	Kallagadde	Fort *(circa* seventeenth century AD)
-do-	Kalkuni	Inscriptions *(circa* eleventh century AD) and Inscribed *sati* stone *(circa* fourteenth century AD)
-do-	Kurali	Siva temple *(circa* fourteenth century AD) and Inscribed Hero-stones
-do-	Kurki	Inscribed Hero-stones *(circa* fourteenth-fifteenth century AD)
-do-	Manjavalli	Durga temple *(circa* fourteenth century AD) and Sculptures of Mahisasura-mardhini

Taluk	Village/Site	Cultural assemblage
		and Saptamatrikas {*circa* fourteenth century AD)
Sirsi	Manjguni	Temple assigned to {*circa* sixteenth century AD)
-do-	Mathadeval	Sankara Narayana temple {*circa* sixteenth century AD)
-do-	Melinaonakeri	Hero-stones {*circa* twelfth century AD)
-do-	Mundigesara	Ganapathi temple {*circa* thirteenth century AD)and sculptures of Vishnu {*circa* thirteenth century AD)
-do-	Narebail	Ruined Siva temple {*circa* fifteenth century AD)
-do-	Navilgar	Ramesvara temple and Inscribed Hero-stones (*circa* fourteenth century AD)
-do-	Neggar	Sculptures of Ganesa, Saptamatrika, and Mahishasuramardhini {*circa* fifteenth century AD)
-do-	Nerlavalli	Inscribed hero-stones {*circa* sixteenth century AD)
-do-	Nuralkop	Sculptures of Mahishasuramardhini, Saptamatrikas and Durga {*circa* fourteenth century AD)
-do-	Shivagao	Siva temple {*circa* fourteenth century AD) and hero-stones.
-do-	Shivahalli	Inscribed hero-stones {*circa* fourteenth century AD)
-do-	Sonda	Jaina Basti {*circa* twelfth century AD) and Siva temple (fourteenth-sixteenth century AD)
-do-	Urkot	Inscriptions {*circa* twelfth century AD)
-do-	Yasale	Ruined Siva temple housing sculptures of Mahishasuramardhini and Saptamatrika

Taluk	Village/Site	Cultural assemblage
		panel *(circa* eleventh century AD), Pillar inscriptions *(circa* ninth-tenth century AD) and Inscribed hero-stones *(circa* fourteenth century AD)

43. Exploration in Mallapur, District Raichur. — R.M. Shadakshariah of Department of History, Gulbarga University, Gulbarga and E.O. Tillner and Bregetti of Switzerland noticed three groups of rock paintings engraved on a rock ceiling of a natural shelter, about 2 km away from Mallapur, in Gangavati taluk. The locality of the site is called Khanasahebana-gavi. A few microliths such as crescent and blades were collected from the shelter.

More than a dozen human and animal figures such as couples (2), boars (4), white deers (2), buffalo (1), fish (1), snake (1), stag (1) and a few composite figures were found executed with red colour on the walls of the shelter. A few of them were overlapping. Two types of figures can be distinguished : one with geometric decoration and the other without any decorations on the body. Of the human figures, two couples were highly realistic. The bodies of the human figures were either elliptical or rectangular and their faces were oval or triangular in shape. Among the groups, two couple figures and one male figure were interesting. The male figure was more than 4 m in length. On the basis of style and technique and relative study, they may be assigned to two phases, namely the Neolithic-Chalcolithic phase and the Iron Age Megalithic phase.

MADHYA PRADESH

44. Exploration in District Bastar.— The Department of Ancient Indian History, Culture and Archaeology of Dr. H.S. Gour Vishvavidyalaya, (formerly Sagar University), carried out extensive explorations in North and central Bastar. The work was directed by V.D. Jha, assisted by K.K. Tripathi under the over-all guidance of Sudhakar Pandey. Several Stone Age sites, viz. Kharagghat, Kalipur, Ghoradah, Karanjia Deurangaon, Bodhra, Chitrakuta, Garhchandella and Binta on the river Indravati (ancient Indra Nadi) and Chatlohanga, Gubrahin, Keshkala, Chapka, Ichhapur, Badedonger, Trithgarh, Raikot, Raye, Badgai, Chhotedonger and Alor were discovered. These sites yielded artifacts of Lower, Middle and Upper Palaeolithic and Mesolithic Age. The tool types included handaxe, chopper, scraper, cleaver, awl, point-borer, borer-cum scraper, saw, core, blade, burin and arrowhead. Besides two neolithic celts were noticed at Chhotedonger in Kondagaon Tehsil. Neolithic settlements located on hilltops have been noticed at Garhchandella in Jagadalpur and at Garh Dhanora in Kondagaon Tehsil. The settlements are enclosed by stone walls at both the sites.

The rock paintings noticed on the Linga Sahai hill near Alor 7 km from Faresagaon,

belong to the protohistoric period. At Edka, 12 km from Naraganpur, the rock paintings of an early historical period were discovered. Burnt brick-Stupas of the Gupta period at Bhongapal (ancient Bhogapala) and Gubrahin in Kondagaon Tehsil; remains of an early medieval *Chaitya* at Jaitagiri (ancient Chaityagiri) in Jagdalpur Tehsil; a ruined brick-temple of the Gupta period along with an image of the seated Narasimha and a medieval temple at Bangoli, both in Kondagaon, were also discovered. The two-armed Vishnu-image of the pre-Gupta period at Village Bastar and the icons of Vishnu belonging to the 5th century AD noticed at Gubhrahin and Deodhanora respectively, are the specimens of superb craftsmanship.

The settlements of an early medieval period were encountered at Gubhrahin and Chhotedonger. A number of medieval icons were discovered at Bastar, Kuruspal, Ghotia, Kesarpala, Narayanapala, Retawanda, Pahurbela, Badedonger, Chhotedonger, Amravati, Badgai, Khursai, Tirathgarh, Tong kongera, Garh dhanora, Garhia kanker and Jagdalpur.

Six inscriptions discovered during explorations throw welcome light on the history of this region. Of these five were noticed at Chhotedonger.

The first, inscribed on a *sati-pillar* and the second on a stone slab, belonging respectively to the fifth and sixth century AD were in a poor state of preservation. The only word *SARABHA* could be made out of the second epigraph. The third one bearing the Devnagari script of ninth century AD relates about the grant of a village in Paradwara Vishaya which is identifiable with the present Bardara Paragana located in the close proximity of Chhotedonger. The fourth epigraph of the ninth century AD mentions the name of *Vankhakaditya* and one Rajakumara. The fifth inscription on the pedestal of the image of Ganapati states about the installation of the icon. The sixth incomplete epigraph, noticed at Kesarpala, belonging to the sixth century AD mentions about *Harshada Deya* and *Suta Bhagura.*

45. Exploration in District Dhar. — Jeeban Kumar Patnaik of the Central Circle of the Survey explored twenty-one villages in the course of village-to-village Survey. The sites where antiquarian remains were noticed are as follows:

District	Tehsil	Village/Site	Antiquarian remains
Dhar	Dhar	Bhirotakot	Remains of walls
-do-	-do-	Budhi Mandu	Brahamanical sculptures
-do-	-do-	Hapsikheri	Sculpture of Hanuman
-do-	-do-	Harsora	Historical mound
-do-	-do-	Juhawada	Sculpture of Chamunda and *sati* pillar
-do-	-do-	Kesur	Mound (historical period)
-do-	-do-	Mahatpura	Sculptures
-do-	-do-	Murorka	Mound and Brahmanical sculptures
-do-	-do-	Nagora	Sculpture of Chamunda

District	Tehsil	Village/Site	Antiquarian remains
Dhar	Dhar	Pancha Ghat	Brahmanical sculpture
-do-	-do	Suli Bardi	Sculpture of Durga and ruins of temple of medieval period
-do-	-do-	Tatapani	Microliths
-do-	-do-	Undakho	Brahmanical sculptures of Paramara period

46. Exploration in Districts Dhar, East Nimar and West Nimar.— The Narmada valley between the towns of Barvvah (Lat. 22° 15'N, Long. 76°3' E) and Barwani (Lat. 22° 2' N, Long. 74° 54' E), comprising parts of the districts of Dhar, East Nimar and West Nimar was explored by Sheila Mishra of Deccan College Post-graduate and Research Institute, Pune, to understand the Quaternary Geology and Palaeolithic cultures of the region. The following position was noticed:

Lithounit	Stratigraphic relationships	Pedodiagenetic features	Associated tools	Estimated age
1. Silt with bedded calcrete	Always rests on bedrock overlain by bouldery weathered gravel, sandy pebbly gravel or yellow silt 0-8 m above river	Formation of 2-5 cm thick calcrete layers along former bedding planes	Mostly sterile. A single cleaver from one exposure	+125,000 years Late Middle Pleistocene
2. Weathered bouldery gravel	Overlies bedrock or silt with bedded calcrete overlain by yellow silt 0-15 m above river	Basalt boulders weathered to core. Upto 2mm weathering ring on compact basalt pebbles. Both pedogenic and non-pedogenic calcrete development	Acheulian	+125,000 years Late Middle Pleistocene
3. Sandy pebbly gravel	Overlies bedrock or silt with bedded calcrete. Overlain by yellow silt 0-15 m above river	Basalt weathering insignificant Only non-pedogenic calcrete development	Re-deposited tools from Lower Palaeo lithic to Upper Palaeolithic periods	+25,000 years to 10,000 years

Lithounit	Straigraphic relationships	Pcdodiagenetic features	Associated took	Estimated age
4. Yellow silt	Overlies bedrock, silt with bedded calcrete, weathered bouldery gravel and sandy pebbly gravels 15-22 m above river	Development of calcrete beds, and nodules a few mili-metres thick. Occ-asionally well deve-loped tubular calcretes	Upper Palaeolithic tools in primary context	25,000 to 10,000 years. Terminal Pleistocene

Lithounits 1 and 2 belong to an earlier aggradational phase of the Narmada. This older alluvium is estimated to be of the Late Middle Pleistocene age.(20,000 - 125,000 years) on the basis of the weathering of the gravels, associated tools and calcretization of the silt. Lithounits 3 and 4 belonged to a Late to Terminal Pleistocene aggradational phase based on the associated Upper Palaeolithic industry and the radiocarbon date from unit 4 of 25, 160 ± 850 BP (BS 286). These two aggradational phases of the Narmada were separated by a period of erosion and weathering of the older alluvium. This phase was probably contemporary to the Middle Palaeolithic period since Middle Palaeolithic tools are not found in any of the alluvial deposits but occurred on the surface of weathered gravels and on bedrock surface. During the period since the deposition of Lithounits 3 and 4, the river has cut 20-22 m into its alluvial deposits. An inset terrace was observed in places and was tentatively dated to the mid-Holocene. The periods of alluviation were interpreted as being more arid than the present. This interpretation was based on the idea that an increase in sediment supply and decrease in the river's capacity to transport the sediment resulting in alluviation would occur if the reduced vegetation provided less protection to the soil surface and lower discharges reduced the capacity to transport the sediment. The gravels of the older alluvium (lithounit 2) are primarily pediment mantles which support the arid phase correlation proposed here. Many of the younger gravels (lithounit 3), show an unusually high (up to 90% in the pebble grade) proportion of resistant, well-rounded rock types along with the occasional slightly abraded calcrete clasts. These unusual relationships between lithologies and between lithology and rounding is interpreted as indicating that these gravels are derived primarily by the re-working of weathered alluvium. This results in the concentration of resistant rock types which are re-cycled in the younger deposit. This finding has implications for the archaeological record since most of the previously reported Lower Palaeolithic tools are being derived from these younger gravels.

The present study differs from the previous workers (Sankalia *et al* 1958, 1966 1970

1974, Joshi, 1958), primarily in separating the older alluvial deposits (units 1 and 2) into two separate phases of alluviation. This was only possible by using additional relative dating criteria, primarily the weathering of basalt in the gravels. As can be seen from the table the stratigraphic relationships of units 2 and 3 are identical. However, the contrast in weathering between the gravels was extreme and leaves no room to doubt their belonging to different periods. It is felt that this approach of supplementing the stratigraphic and geomorphic relationships of Quaternary deposits with relative dating methods such as weathering and pedogenesis will yield significant results in all parts of peninsular India where the alluvial deposits arc typically thin and discontinuous. During this study, the following Palaeolithic sites were discovered:

Site Name	Period	**Context**	**Other**
Beda confluence	Middle Palaeolithic	Bedrock surface overlooking Narmada	
Beda river	Upper Palaeolithic	Yellow silt	
Behagaon	Middle Palaeolithic	Surface of weathered gravel	
Choral confluence	Lower Palaeolithic	Weathered gravel	
Choral	Lower Palaeolithic	Surface	Isolated finds in basalt area.
Chota Barda	Upper Palaeolithic	Yellow silt	One fragment of ostrich eggshell
Daungri	Middle Palaeolithic	Surface of basalt hill.	
Dharampuri	Upper Palaeolithic	Yellow silt	
Ganesh nala	Middle Palaeolithic	Surface of weathered gravel.	
Gangatkheri	Lower Palaeolithic	Weathered gravel	
Katar	Middle Palaeolithic	Buried in surface rubble on basalt hillock.	
Lakkanpur	Lower Palaeolithic	Surface	Isolated find in basalt area
Mehtakheri	Lower Palaeolithic	Weathered gravel	Middle Palaeolithic tools on the surface and Lower Palaeolithic in gravel
	Middle Palaeolithic	Weathered gravel	
Mandwara	Lower Palaeolithic	Silt with bedded calcrete	
Nalway	Upper Palaeolithic	Yellow silt	
Nisarpur	Middle Palaeolithic	Surface of weathered gravel	
	Upper Palaeolithic	Yellow silt	

Site Name	Period	**Context**	**Other**
Onkareswar	Lower Palaeolithic	Surface	Quartzitc tools on Quartzite bedrock
Pitnagar	Upper Palaeolithic	Yellow slit	fragments of ostrich egg shells
Ramkota	Lower Palaeolithic	Surface	Quartzite tools on quartzite bedrock
Sahasradhara	Middle Palaeolithic	Bedrock surface overlooking Narmada	

Lower Palaeolithic tools were found as surface occurrences in areas of quartzite bedrock, as isolated finds in areas of basalt bedrock and in alluvial deposits. Finely made handaxes and cleavers were found at Gangatkheri and are being eroded from the exposure of weathered gravel present there. At Mandwara, a cleaver on tracheytic basalt was recovered from the surface of an exposure of silt with bedded calcretes. The oldest deposits recognized in this study therefore appear to be contemporary with the late Acheulian.

Middle Palaeolithic tools on quartzite were found on the surface of weathered gravels at Mehtakheri, Behagaon, Ganesh *nullah* and on the surface of bedrock near the present Narmada river at Katar, the Beda confluence, Sahasradhara and Daungri. No Middle Palaeolithic tools were found in stratified context.

Upper Palaeolithic sites occur as lithic scatters on the surface of recently eroded yellow silt. These occurrences are in probable primary context. Bone, shell and burnt earth are found in association with most of these occurrences. Tools were collected from Pitnagar, Nal-way, Chota Barda, Beda and Nidarpur. Ostrich eggshell was found at Chota Barda and Pitnagar. A date of 25,160 ± 850 BP (BS 286) was obtained from a shell layer with a few Upper Palaeo-lithic type of tools near Dharampuri.

47. Excavation at Atud-Khas, District East Nimar. — The Department of Archaeo-logy and Museums, Govt. of Madhya Pradesh, carried out a small-scale excavation at Atud-khas.

The work was undertaken by C. Krishna, assisted by R.R. Singh and D.P. Misra. Although five trenches were laid at the Atud mound on the Kaveri bank, natural soil was struck only in two trenches, i.e. ATK I and ATK II at 6.10m and 3.30 m respectively. The mound is about 12 m high. On the basis of the classified pottery and antiquities, the thick deposit was divided into five major periods with sub-phases. The deposit extended from medieval to pre-chalcolithic as at Maheshwar and Navdatoli. The pottery designs and types represented both northern and western Chalcolithic ceramics. The sequence was regular and the periods were classified on the basis of the observation of floors, flood deposit and antiquities.

Period	Date	Antiquarian remains
Period I	Pre-chalcolithic	Crude blades, stone objects and incised unpainted pottery
Period II	Chalcolithic	Painted and incised pottery, microliths, beads, bone points and copper objects
Period III	Early historical (Iron Age)	Stone images of Buddha and *Nayika,* copper coins, terracotta, iron and copper objects, stone beads and pottery
Period IV	Early medieval	Structures of brick and stone and copper coins
Period V	Medieval	Temple, forts and sculptures

For the first time such type of cultural deposit has been traced out in the southern lower valley of the Narmada, showing the migration of cultures from both north and south. This confirms the views of H.D. Sankalia and M.K. Dhavalikar about the location of such cultural centres on the national highway running from south to north via Anupadesh.

48. Exploration in Central Narmada Valley, District Hoshangabad.— After the report of *Homo erectus* from Hathnora, a site about 40 km north-east of Hoshangabad, once again the prehistoric archaeologists have shown keen interest in these deposits. Therefore, a brief exploration was conducted by Salahuddhin and R.K. Ganjoo of the Deccan College Post-graduate and Research Institute, Pune, in order to study the archaeological association with the fossil hominid from Hathnora. In addition to this, various other sites on the main river Narmada and its tributaries were also studied.

During the course of exploration prehistoric artifacts were collected *in situ* from the bed yielding fossil hominid. The tool kit comprises of flakes, scrapers and a few cores. The thin, alternately small flake scars, absence[1] of cortex and defused bulb of percussion are indicative of the Late Acheulian character of the tool assemblage from .Hathnora. All these tools made on Vindhyan sandstone are fresh in condition indicating more or less the primary context of the tools.

The faunal assemblage collected from the site and adjoining areas, assigns these beds to not older than the late Pleistocene. On the basis of the archaeological, palaeontological and geological investigations at the site, the age assigned to the bed yielding the fossil skull cap and late Acheulian tools is early Late Pleistocene-late Middle Pleistocene. And hence, on the basis of the archaeological studies the fossil hominid from Hathnora in all probability should be an archaic *Homo sapien* and not the *Homo erectus,* as identified earlier. It is further supported by various finds of archaic *Homo sapiens* at late Acheulian sites of Africa and Europe, where it has been proved beyond doubt that archaic *Homo sapien* was at par with *Homo erectus* since late Middle Pleistocene.

49. Exploration in District Mandla.- V.D. Jha, assisted by K.K. Martin of Dr. M.S. Gour Vishvavidyalaya, Sagar, discovered the remains of a stupa with burnt bricks of Mauryan period at Mawai; mediaeval sculptures at Hrdayanagar, Deori, Koomha Chhivalia, Patha, Narayanganj and Sailwada and image of Surya at Sailwara, some 20 km from Ramanagar on the bank of Budhaner.

50. Exploration in District Morena.— In the course of exploration, under village-to-village survey scheme A.K. Pandey of the Central Circle of the Survey located the following sites of archaeological interest:

Tehsil	Village/Site	Antiquarian remains
Jora	Chiratani	Historical site with pottery
-do-	Dongarpur	Historical site with pottery
-do-	Kakardha	Historical site with pottery
-do-	Khaneta	Historical site with pottery, medieval Brahmanical sculptures of Nataraja, Mahisasuramardini, Siva-*linga,* Vishnu, etc., architectural fragments and *sati* pillar
-do-	Khera	Historical site with pottery
-do-	Thara	Historical site with pottery
Morena	Atarsuma	Historical site with pottery and two medieval copper coins
-do-	Bandha	Medieval Brahmanical fragmentary sculptures, architectural fragments and a *Siva.-linga*
-do-	Bamorkalan	Historical mound with pottery, medieval fragmentary Brahmanical sculptures of *Nandi,* Uma-maheswara, architectural fragment and *sati* pillars
-do-	Jererua	Historical site with pottery, medieval fragmentary Jaina sculptures and architectural fragments
-do-	Jaroni	Historical site with pottery
-do-	Karua	Historical site with pottery
-do-	Mahatoli	Medieval fragmentary Brahmanical sculptures
-do-	Moregaon	Late medieval fortress and *sati* pillars
-do-	Pahadi	Historical site with pottery, medieval Brahmanical remains of three temples of early Gurjara Pratihara period, Brahmanical sculptures and architectural fragments of medieval period
-do-	Pamaya	Historical mound with pottery, medieval fragmentary Brahmanical sculptures and architectural pieces

Tehsil	Village/site	Antiquarian Remains
Morena	Phulpur	Historical mound with pottery, medieval fragmentary Brahmanical sculptures
-do-	Sapacholi	Remains of Saiva temple of early medieval period, and fragmentary Brahmanical and Jaina sculptures.
-do-	Saraichhola	Ruins of a fortress of late medieval period
-do-	Sikaroda	Historical site with pottery and *sati* pillars
-do-	Silayatha	Historical site with pottery, medieval fragmentary Brahmanical and Jaina Sculptures and *sati* pillars

51. Exploration in District Raisen.— P.K. Mukerjee of Central Circle of the Survey explored the following sites of archaeological interest:

Tehsil	Village/Site	Antiquarian Remains
Begamganj	Chainpura	Historical mound and medieval Brahmanical sculptures in mutilated condition
Goharganj	Arjani	Two painted rock-shelters, sculptures, architectural fragments and *sati* pillars
-do-	Goltodia	Mounds with microliths, two *sati* pillars and medieval sculptures
-do-	Intkheri	Brahmanical sculpture and a *baodi*
-do-	Kham aria	Brahmanical sculptures.
-do-	Khedanagardal	Mound with mircroliths and polished querns of Chalcolithic period (?) and sculptures
-do-	Semri	Remains of medieval temple
-do-	Tan	*Sati-pillar* and late historical site

52. Exploration at Dabala and Sachet, District Raisen.— A team headed by C. Krishna with R.R. Singh and O.P. Misra of the Department of Archaeology and Museums, Government of Madhya Pradesh, discovered remains of temple at Dabala. This site, which is believed to be an important seat of the sakti cult, yielded good sculptures such as a huge seated image of Goddess Durga in *lalitasana,* seated Lakulisa, dancing Ganesa and *dikpalas,* medallions and carved miniature *sikharas,* and door-jamb. The temple stands on a small hillock, facing a river to the north. It has a sixteen pillared *mandapa.*

The .survey party also discovered a small mound yielding a painted black-on-orange ware of late Chalcolithic and microlithic blades, etc. at Sachet. Besides, an inscribed medieval

temple remains and a portion of fortified palace were also located on the river bank

53. Exploration in District Rewa.— In the course of village-to-village Survey P.K. Mishra of the Central Circle of the Survey explored the following sites:

Tehsil	Village/Site	Antiquarian remains
Teonthar	Badagaon	Tank and brahmanical sculptures
-do-	Dih	Image of Parsavanatha
-do-	Jhar	N.B.P.
-do-	Rambag	Siva temple in dilapidated condition and Brahmanical sculptures
-do-	Raipur	Fortress in dilapidated condition alongwith the remains of a temple of late medieval period
-do-	Shankarpur	Fortress in a dilapidated condition having paintings of Islamic period
-do-	Shivpur	Siva temple of Kalachuri period and Brahmanical sculptures

54. Exploration in District Sarguja.— During the course of investigation V.D. Jha of the Department of Ancient History and Culture of Dr. H.S. Gour Vishvavidyalaya, Sagar, discovered seven painted rock shelters near village Barel in the Barel ranges of Bharatapur Tehsil. The paintings ranged from prehistoric to the early historical times. The early historical habitational remains were also noticed at the foot of the Ramgarh hills in Khaprajhar locality in the form of burnt brick-plinths, ring wells, ceramics, stone-beads and punch marked coins. An inscription of tenth century AD bearing 17 lines in Devanagari characters at Dipadiha was also an important find.

MAHARASHTRA

55. Excavation at Tuljapur Garhi, District Amravati.— The Excavation Branch (I) of the Survey under the direction of B.P. Bopardikar, assisted by S.K. Lekhwani, D.K. Ambastha, S.K. Mitra, K. Ismail, J.N. Gandhi, S.V. Sutaone, P.M. Bhope, P.G. Raju, R.K. Roy, M.U. Qureshi, B.K. Rudra, A.U. Ganar and Miss I. Pande conducted excavation at Tuljapur Garhi (Lat. 21 ° 10 N; Long 77 ° 35' E) with a purpose to establish the cultural sequence and to expose the settlement pattern and characteristic cultural features of the Chalcolithic site in the Vidarbha region.

Situated on the right bank of river Purna, a tributary to the river Tapti.the mound measured 210 m on the north-south, 90 m on the east-west with approximately 21 m in height above the river level. The excavation revealed a cultural deposit of about 1.50 m thick and was found a single culture, i.e. the Chalcolithic period, divisible into two sub-Phases A and

Fig. 4. Tuljapur garhi: Pottery types. *See page 50.*

B. The entire range of pottery belonged to the wheel-turned category. Malwa and Jorwe Wares were the main pottery assemblage of Phase A and B (PI. 17) respectively with overlapping signs.

Phase A was characterized by the occurrence of Malwa ware. The fabric of this ware ranged from medium to fine. They were painted in pre-firing stage either in black or in violet. The painted designs were mainly drawn in horizontal bands, vertical lines and groups of diagonal lines. The main types were bowls, dishes and vases (Fig. 4). Besides pottery, other important findings were steatite micro-beads, terracotta beads, bone points and beads of semi-precious stones such as jasper, agate and camelian (Pl. 18). A good number of microliths usually found with chalcolithic sites of the Tapti valley were found with painted sherds. The main types were parallel sided blades, crescentic points, a few scrapers and cores.

Phase B was represented by Jorwe ware of fine fabric. The painted designs were of criss-cross patterns, groups of diagonal lines, wavy lines, ladder designs and horizontal bands. The most common types in this ware were concave sided carinated bowls and spouted vessels. Besides, dishes and vases with high necks were also found. A solitary piece of long spout was found which may be a part of broken spouted vessel. Occurrence of copper ring, bangles, fish hooks and microbeads, besides other important antiquities such as stylus(?), etched camelian beads were interesting to note. These were associated with microliths (Pl. 19) comprising of parallel sided blades, flakes, points and cores made of chalcedony and agate.

The red ware (both slipped and unslipped), black ware and Black-and-red ware continued in both the phases. The fabric of red ware ranged from coarse to medium. The types in this ware were vases, basins and jars. Black ware and Black-and-red ware were of medium fabric. Dishes and bowls were common in this ware. Pre-firing graffiti were also noticed on a few sherds of Black-and-red ware. Unlike pottery, beads of terracotta shell, agate and camelian and animal bones are common in both the phases except the camelian etched beads which are found in Phase B only.

The unique discovery at the site was of a child burial in a small oval shallow pit in Phase B. The burial was of a secondary nature with the long bones and the skull lying in almost east-west orientation. A small bowl of Black-and-red ware kept near the skeleton was a burial furniture. Twelve camelian beads were found scattered along the neck portion of the child. A potter's kiln, irregular in shape with its inlet and outlet (fire channels) is associated with charcoal, potsherds and a dabber found within the house plan of this phase.

Inhabitants representing in both the Phases A and B lived in huts built of perishable materials. The plans of the huts were either circular or elliptical (ranging from 5.20 m to 5.70 m in diameter).

The floors of the houses were made of rammed clay mixed with *kankary* sand, interspersed with river pebbles. The diameter of the post-holes ranged between 0.10 m to 0.12 m. A *chullah* was noticed in one such hut floor.

Surface remains show that the site seems to have been used as a camping place by the Marathas during the seventeenth and eighteenth century AD.

56. Excavation at Daulatabad, District Aurangabad.— In continuation of the excavations conducted in the previous years, a joint team of the Deccan college Post-graduate and Research Institute, Pune, Bharat Itihas Sanshodhak Mandal, Pune, Marathwada University, Department of Archaeology, Government of Maharashtra and the South-western Circle of the Survey, carried out extensive excavations in the residential area near Bharatmata temple, with a view to obtain a detailed picture of the life and pattern of settlement in medieval times.

C.L. Suri assisted by B.R. Mani, P.N. Kamble, K.P.S. Bhadoria, Ajit Kumar and M. Mahadevaiah of the South-western Circle of the Survey carried out excavation at DLB-3. Only an upper phase of the site was excavated and accordingly the work was carried out in as many as 46 trenches laid on grid system, each having an area of 5x5 m.

Four house-complexes of about sixteenth-seventeenth century AD were partly exposed. The usual feature of the house was two or three rooms in a line with a courtyard in front. The structures were usually of coarse rubble-masonry and sometimes architectural fragments and stone-blocks of late medieval period were found reused. Frequency of roof-tiles indicated their common use in construction of the houses. A soakpit of stone masonry was also found. A heap of human bones and pieces of skull in association with a glass bangle and two finger-rings, one of silver and other of copper were found. Two burials with skeletons in the north-south orientation with faces turned towards west were also encountered.

The minor antiquities included five pieces of gold ornaments; copper finger-rings, ear-cleaner, toothpicks, forty-two medieval coins, one seal, jingle bell, amulet; a large number of iron arrowheads, horse-stirrup, horseshoes, knife blades, sickle, spoon, nails of various sizes, hooks, chains; glass bangles, pieces of pots and bottles; shells; small stone sculptures including two very small broken *arghas* or *yonis,* a 2.5 cm Ganapati, broken head of a *nandi,* broken figures of a devotee with clasped hands (8 cm) and another holding fly-whisks in both the hands; stone pestles, querns, grinding querns, beads, catapult-balls; terracotta animal figurines, lamps and beads, besides various types of sherds of Chinese porcelain—one with Chinese characters, celadon ware, Kushana ware (gritty white ware), local glazed ware and other common types of late medieval pottery.

M.S. Mate of the Deccan College Post-graduate and Research Institute and G.G. Majumdar and Usha Ranade of the Bharat Itihas Samshodhan Mandal, Pune, carried out excavations at a site about 30 m to the south of the Bharatmata Mandir. The excavation revealed a large garden plot complete with cisterns and masonry channels overlying a huge stone structure. The latter was associated with white celadon ware with blue designs on it.

R.S. Morwanchikar and M.S. Dhumal of the Marathawada University, Aurangabad explored and excavated portions connected with the medieval water-supply system.

57. Exploration in Districts Bhandara, Nagpur and Wardha.— Chandra Shekhar Gupta of the Department of Ancient Indian History, Culture and Archaeology, Nagpur University, Nagpur, during his exploration in Districts of Bhandara, Nagpur and Wardha, discovered the following sites with their respective cultures ranging from Prehistoric to Early Historical periods.

District	Taluk	Site	Cultural assemblage
Bhandara	Pauni	Pauni	Brick wall and platform-like structure
Nagpur	Kuhi	Gavali Tekadi	Sherds of Black-and-red and slipped red ware, Terracotta and broken sculpture of Narasimha
-do-	-do-	Kola Suran hill range	Lower Palaeolithic tools
-do-	-do-	Veltur	Megaliths
-do-	Mauda	Tharsa	Potsherds ranging from proto-historic to historical periods and sculpture of Narasimha.
-do-	Umred	Umred	Lower Palaeolithic tools
Wardha	Wardha	Paunar	Early historical and sculptures

58. Excavation at Kaothe, District Dhulia.—M.K. Dhavalikar of Deccan College Post-graduate and Research Institute, Pune, assisted by Vasant Shinde, Shubha Atre, Y.S. Rasar and V. Vishwas Rao conducted excavations at Kaothe a small village, located on the left bank of river Kan, a tributary of the Tapi. The ancient site is situated immediately to the west of the village. The cultural debris is about one metre thick and represents habitation of chalcolithic period.

The pioneering colonizers at Kaothe probably came from Gujarat if their sturdy red painted pottery, which bears unmistakable Harappan influence, is any indication. They must have come through the Tapi valley and Kaothe appears to be their major settlement. The people lived in pit dwellings which have been unearthed in the course of excavation. The dwelling pit was usually oval or circular on plan but not very deep. The largest pit dwelling was oval on plan (5.60 x 3.65 m) and 30 cm deep whereas the circular one had a diameter of 1.5 m. The pits had a series of post-holes around the periphery and the roof probably was conical. It appears that each household consisted of several pits in its courtyard. The kitchen was located in a small circular pit which contained a two-armed *chullah* with three roundish knobs. Besides this, there were deep pit silos- for storing grain and shallow ones probably for poultry. It is likely that the habitation was seasonal as is evident from flimsy floors, make-shift kitchens and absence of fire pits. Even the *chullahs* in the kitchen showed very little burning.

Of the ceramic wares, the most predominant was a sturdy red pottery painted with designs in black. It was of extremely fine fabric and thick in section with fully oxidized cores. The painted patterns were mostly linear and geometrical. The shapes included the globular jar, *lotas,* basins, bowls and even dishes which are so rare in the later chalcolithic pottery of Maharashtra. The pottery no doubt bears a striking resemblance with Harappan pottery so far as the fabric and the potting techniques are concerned, but no Harappan fossil form or design was present. Associated with it is the Savalda ware which has a coarse fabric but it is

very elegantly decorated with plant, fish and animal motifs. The coarse handmade red-and-grey wares also occur whereas the Kayatha ware indicates contact with Malwa at a very early period.

A most noteworthy feature of this early farming culture is the conspicuous absence of stone and copper tools. What we have instead is a variety of bone tools which have been found in hundreds. These included points, chisels, awls, etc. This is a novel feature which has not so far been noticed at any other early farming settlement in Maharashtra.

The mixed economy of the people was based on subsistence agriculture, stock raising and hunting and fishing. Charred seeds of *bajara-pearl* millet - *(pennisetum typhoides)* and *sesamum* have been recovered from the excavation, but we cannot vouch for their chalcolithic date as the site is under cultivation. However, it may be recalled that *bajara* has been reported from Rangpur (Period III) and hence its occurrence at Kaothe is not improbable. .

The people buried the dead in a pit specially dug for the purpose near the house. The dead body was placed in the pit in a supine position (PI. 20). Of the four burials exposed, two were those of adults and two of children. They were, however, devoid of funerary goods.

The habitation at Kaothe can be dated to *circa2* 000 BC to 1 800 BC on the basis of the evidence of the Kayatha ware. This is also supported by a single C 14 date 1920 ± 70 BC. Although the site has been classed as Late Harappan, the time bracket points to its being a junior contemporary of the Gujarat Harappan.

59. Exploration at Arsoda, District Gadhchiroli.— The Excavation Branch (I) of the Survey conducted an exploration under the direction of B.P. Bopardikar, assisted by D.K. Ambastha, S.K. Mitra and M.U. Qureshi in District Gadhchiroli. The ancient mound is situated, about 5 km north of village Armori on the left bank of the river Wainganga. Though the mound is highly disturbed by agricultural activities, fairly good quantity of red ware, Black-and-red ware and black ware have been collected from the surface. Pottery revealed the presence of both Megalithic and early historical periods.

60. Excavation at Raipur, District Nagpur. — In continuation of the work on the project of Vidarbha megaliths, the megaliths at Raipur about 18 km west of Nagpur were excavated by S.B. Deo of the Department of Archaeology, Deccan College Post-graduate and Research Institute, Pune. The site lies on the right bank of the river Wunna. The extent of the megalithic field is around ten hectares covering villages of Wanadongari, Nagalwadi and Takli. The total number of megalithic stone circles is three hundred and ninty-one.

The area falling under the present day Raipur was selected for excavations, as it gave a concentration of these burials. On the basis of clustering of the megaliths, the megalithic field was divided into four localities. However, two stone circles in Locality III and two in Locality IV were excavated.

Prior to the excavations, the entire area was thoroughly surveyed and every physical feature was noted and all stone circles were plotted. Two significant features which deserve mention are first that the stone circles are concentrated on either side of a huge and exten-

sive dyke obviously because it was easier to draw boulders from it for arranging a burial; and secondly, the process of arranging a stone circle was evidenced at Raipur in as much as five Stone Circles without evidence of their use for burial were available. These boulders were placed on the virgin rock surface and there were absolutely no filling marks on any of them nor was there any trace of pebble filling. It was, therefore, obvious that these stone circles were kept ready but were not used.

The excavation of four stone circles with caim filling revealed not only new types for the first time in Vidarbha but also new types of antiquities. For instance, Megalith 1 with a diameter of 15 m gave evidence of a cist in the centre. However, the novel features of this burial was that the centre was found to have been dug in a rectangular pit into the rock to a depth of 15 cm which was filled with compact black clay. Over the black clay were placed the slabs of the cist. The cist consisted of a chamber divided into equal dimensions by a horizontally placed slab. The dimension of the entire cist was 180 x 60 cm and the thickness of each sandstone slab was 11 cm. The cist proper was found to be empty. However, in the outfield, within the stone circle but outside the cist were found partial skeletal remains of three human beings. The other antiquities comprised of the black-and-red ware, black burnished and the micaceous red ware; iron objects like the nail-parers, lamps, adzes, arrowheads; copper bangles, necklaces of interlocked tiny and thin rings and a lid with the finial of bird motif as at Mahurjhari, Takalghat and other megalithic sites.

Megalith 2 in the same locality was distinguished by the use of exceptionally large boulders in the creation of the circle, as also the use of very large pebbles for filling. It was further distinguished by a group of boulder-heads jutting out in the centre, one of the boulders having cup marks. It had a diameter of 16.35 m. On" excavation, the jutting boulder heads in the centre were found to have been the tops of four huge boulders so placed as to form a central chamber (Pl. 21). These boulders were placed vertically with a packing of smaller pebbles at the base. The chamber measured 140 x 215 x 160 cm, the last indicating the depth. The inner faces of these boulders were chiselled flat. The chamber was empty. Elsewhere within the circle were found painted black on red pottery, black-and-red ware, micaceous red and coarse red ware. This was the largest circle, it gave maximum number of antiquities and painted pottery, as also horse ornament made of copper sheet (Pl. 22) reminiscent of similar ornaments from Mahurjhari and other sites. A large number of horse teeth and bones were found. Human remains in the form of teeth were recovered. There were also a large number of copper and iron objects.

Megaliths 3 and 4 in Locality III to the west of Locality IV were found to have been normal stone circles without any cist or chamber. Megalith 3 had a diameter of 15.30 m whereas Megalith 4 had 10.40 m. These two gave no painted pottery but the normal wares like the Black-and-red, micaceous red and black burnished wares. However, in Megalith 3, there were remains of two horses, possibly sacrificed. Besides, fragmentary human bones and teeth were also located. The other antiquities comprised of iron axes with cross ring fasteners, adzes, hoes and copper bangles.

The Raipur megaliths have thus brought out new types of megalithic constructions not

known so far in the Nagpur region.

61. Excavation at Pune, District Pune.— H.D. Sankalia noticed a habitation site of the Palaeolithic man by the side of the Bombay-Pune Road where the Deccan College Campus (more than 120 acres) is located. While the foundation of the house was being laid a huge stone now recognized as a Palaeolithic core — was found in a squarish pit covered with yellowish silt. A few more pieces of stone core when carefully examined, these turned out to be made, not of the local trap rock but from a dyke of dolerite. Five palaeolithic tools, three handaxes and two river pebbles in a matrix of red clay by the side of the dyke were also recovered.

62. Excavation at Ami, District Yavatmal.— The Department of Ancient Indian History, Culture and Archaeology, Nagpur University, under Ajay Mitra Shastri assisted by Chandra Shekhar Gupta and Malati Mahajan, resumed excavations at Ami. Staff and students of Prachaya Niketan, Bhopal, also participated in the excavations. Since the mound is being used as a burial ground by the villagers, only nine trenches of various sizes depending on the availability of undisturbed or less disturbed areas could be tapped. The results of this season, besides confirming last season's cultural sequence *(1978-79,* pp. 71-72), further revealed on the southern slopes of the mound a brick well with a diameter of one metre built of wedge-shaped baked bricks similar to the one found earlier on the northern slopes. However, as the mound in this part is very much eroded and disturbed, the working level of the well could not be traced.

The topmost trench (Rl) revealed about one metre wide mud wall which was running east-west on the periphery of the top of the mound. In order to know the continuity of the wall four more trial trenches (R2 - R5) were laid along the periphery. The mud wall could be found in all these trenches suggesting it to be the part of the rampart wall. In trench Rl the extant height of the mud wall was 1.5 m. This mud wall was given a rubble foundation and can be assigned to the Satavahana period on the basis of associated pottery and other antiquities.

The pottery included Black-and-red Ware, painted black on red ware, black and red slipped, coarse red and dull red wares. The types included *handi,* globuar pots, carinated vases, bowls and lids. The other minor antiquities included lead and copper coins belonging to the Satavahana period, iron nails and blades, beads of semi-precious stone, shell and other terracotta objects such as bangles, beads, hopscotches, shell, ear ornaments *(tatanka)* and a *triratna.*

Further, in order to trace the extent of the ancient habitation, a 5 x 5 m trench (Z) was laid just behind the Police Station on the western part of the mound. In addition to the earlier three periods noticed on the northern and the southern slopes of the mound (Panch Pandava Tekdi), a new cultural period of Post-Satavahana time (Vakataka) was recorded. This was corroborated mainly by the find of a copper coin of the Vishnukundin. No significant pottery other than usual black, red and dull red ware were noticed. Other minor antiquities included iron objects like nails, rod, hook; copper finger-ring; shell bangles; and beads

and ear ornaments of semi-precious stones and terracotta.

MANIPUR

63. Exploration at Mongjam, District Imphal.— O.K. Singh, assisted by S.R. Singh of the Department of Archaeology, Government of Manipur, explored Mongjam 11 km north of Imphal. A trial dig revealed that a greyish loam fan deposit overlies the light yellowish brown fissure clayey deposit probably of late Holocene. The fan deposit was 30 cm to 34 cm in thickness. The archaeological relics consisted of tripod legs, plain and decorated pot sherds, a piece of glazed ware, a small iron knife, teeth of animals, clay net sinkers and char coal pieces from the fan deposit in a mixed form. The decorated potsherds included incised, perforated and carved paddle impressions. The potsherds were black, whitish, red and brown in colour and in some potsherds the two surfaces exhibited different colour. The handmade potsherds were generally tempered with sand.

64. Exploration at Nongpok-Keithelmanbi, District Senapati.— In the course of the exploration in the Thoubal river valley, O.K. Singh, assisted by S.R. Singh of the Depart ment of Archaeology, Government of Manipur, discovered four ancient terraces on the left bank of the Thoubal river and a prehistoric site at Nongpok-Keithelmanbi (about 13 km north east of Yairipok Town). The terraces are 35 m, 33 m, 12 m and 7m high from the present river bed. The alluvia on the two high terraces showed latsolic weathering and from the rate of weathering it appears to be very old, probably of late Pleistocene. The third terrace, i.e. 12 m terrace was an aggradational terrace, the gravel deposit is overlaid by clayey silt. The clasp supported gravel deposit resting on the bed-rock of 7 metres of the youngest terrace was almost fresh and overlaid by a mottled fine sandy silt. During the exploration three flaked pebbles and one pebble striker were found embedded in the alluvium of the 35 metre terrace at a depth of 40 cm to 60 cm.

On the opposite side on the right bank of the Thoubal river about half-a-km towards the south-east of the 35 metre terrace there is a small hillock. At present the top soil on the hillock has been eroded. The exploration revealed two pebble choppers, one flaked pebble with a side notched and a large number of potsherds, tripod legs and pieces of glazed ware.

ORISSA

65. Exploration in District Cuttack. - Amarendra Nath, assisted by K.M. Suresh of the Excavation Branch (IV) of the Survey, explored a medieval site at Kothakhal located between the Balikuda railway station of the Cuttack-Bhubaneswar highway in the suburb of Gopalpur. In a cutting, a brick structure with lime mortar was noticed. Several terracotta tiles of grey colour were found scattered at the site. The occurrence of pottery showed the predominance of grey ware over the red ware.

66. Exploration in District Dhenkanal.— Amarcndra Nath and K.M. Suresh of the Excavation Branch (IV) and R.C. Agravval of Bhubaneswar Circle of the Survey and B.K. Rath of the Department of Archaeology, Government of Orissa, revisited a neolithic site at Sankarjang of Angul Taluk. The site was earlier explored by the Department of Archaeology, Government of Orissa. During this year's exploration, Lower Palaeolithic tools were picked up from the foot of Jiminia hillock. It is an open air site located in the upper valley of the Kumaria. The implements were recovered from the red soil deposit which was lying in patches in the foot hill area as well as along the banks of Kumaria. This deposit appeared to be of colluvial origin. All the implements were made of quartzite and comprised of cores, flakes, ovates and Acheulean handaxes. An interesting feature noticed was that some of these tools were embedded on the heaps of oval or circular quartzite stones; in some cases lateritic stones were also fixed to these heaps in unorthodox manner. There is a likelihood that there might be burials underneath. In addition, neolithic tools picked up from the site included a ring stone and small celt.

67. Exploration in District Ganjam.— Amarendra Nath and M.P. Singh of the Excavation Branch (IV) of the Survey and K.S. Behera of the Department of History, Utkal University, Bhubaneswar jointly explored the coastal region between the estuary of the Rushikulya and the eastern fringe of Chilika lake; and discovered medieval sites and temple. At Potagarh, the left section of the Rushikulya, a brick *jelly* and lateritic *kankar* soil mixed with floor embedded at a depth of one metre was noticed. The exposed extant of the floor measured 30 m and the thickness varied from 10 to 15 cm. This extensive floor possibly served as a platform for loading and off loading of the cargo to be carried by ships. A few specimens of blue and white Chinese porcelain and red ware were picked up from the deposit above this floor. The shapes met in the Chinese ware were bowls and dishes and in red ware bowl, dish and vases. The cultural milieu on comparative grounds may be dated between *circa* twelfth-fourteenth century AD.

At Kantaigarh, on the sea-coast in the midst of sand dunes, a temple dedicated to Bateswaro (Siva) was noticed. Built in the Orissan style, the *rekha sikhara* over the sanctum was plastered whereas the *sikhara* over the *mandapa* had collapsed. The entrance to *mandapa* was flanked by a round plaster, entwined by a *naga* as seen in Rajarani and Meghaswar temples at Bhubaneswar. Thus the temple may safely be assigned to *circa* eleventh century AD. In the vicinity of the temple no mound could be located as the area was fully covered by sand. However on the surface, red ware sherds assignable to the medieval period were picked up.

To the east of Chamunda temple on the outskirts of Paluru, a mound bisected by the road leading to Prayagi yielded red ware, shapes like ribbed fragment of a dish with a flaring rim, a bowl having ledge on the exterior were met with. A fragmentary terracotta dabber and a wheel were also picked up.

Over an area of half-a-km between Prayagi and Amaleswara (Siva) temple, sherds of red ware extensively scattered in the midst of sand dunes were noticed. As such no habitational mound could be located, but a distinct red ware type having a thick rim, flattened at the top and sharp taper at the neck was noticed. On comparative grounds, the site may be assigned to *circa* twelfth-fourteenth century AD.

68. Exploration in District Kalahantli.- Amarcndra Nath and K.M. Suresh of the Excavation Branch (IV) and R.C. Agrawal of Bhubaneswar Circle of the Survey and B.K. Rath of the Department of Archaeology, Government of Orissa explored Nehena, 4 km west of Khariar and discovered a few sherds of black-and-red ware, one of them significantly bearing paintings in white. In addition, a few sherds of an early historical period were also noticed.

69. Exploration in District Keonjhar.- J.S. Nigam assisted by K.M. Suresh of the Excavation Branch (IV) of the Survey, explored the region around the famous painted rock-shelter and Gupta inscriptions at Sita Bhanji and discovered two sites at Gadgodi Goda and Randuni Kanda. The pottery picked up from the former site included red-and-grey wares. The shapes comprised of bowls, dishes, lid-cum-bowls, basins, troughs, *handis,* vases, plates, and storage jars. One each of tubular spout, cylindrical fragmentary handle or ring and pot-sherd bearing knuckle pattern in applique were also found. Other finds included a fragmentary lid of a casket made of soapstone, a tiny fragment having incised criss-cross design; and terracotta discs.

Randuni Kanda yielded both red and grey wares. The shapes included bowls, lid-cum-bowls, basins, *handi,* vases and storage jars. A tubular spout and a fragmentary handle were also found. Amongst the minor antiquities are two terracotta discs and a small fragmentary wedge shaped flat stone, showing no evidence of having been used.

At both these sites, scattered brickbats indicated structural activities. Remains of a few brick walls (size 43 x 20 x 7 cm) can be seen on the surface. The nature of the structures could not be determined. The proximity of the Gupta inscriptions, the rockshelter having paintings in Ajanta style and the ceramic evidence tends to show that Gadgodi Goda and Randuni Kanda are contemporary sites. On the basis of the cumulative evidence these sites may be dated between *circa* fifth to eighth century AD.

70. Exploration in District Phulbani.- During the course of exploration in the estuary of the Tel and on the right bank of the Mahanadi, Amarendra Nath and K.M. Suresh of the Excavation Branch (IV) and R.C. Agrawal of Bhubaneswar Circle of the Survey and B.K. Rath of the Department of Archaeology, Government of Orissa, discovered a neolithic celt made on chert from a mound locally known as Manmunda Asurgarh. A similar celt was picked up earlier at Malpada Ghat near the village Shrimal *(1981-82,* p. 54). Likewise, a fossilized fragmentary antler reported earlier was also picked up during the year. Further, plain and white painted black-and-red ware were also noticed. The white paintings which were confined to the inner black surface included simple multiple bands, strokes and groups of curvilinear vertical and wavy lines. The shapes included shallow, deep bowls and dishes. A black slipped sherd of a dish has a graffito mark having an oblique line joined about its middle to the right by smaller multiple oblique strokes. It roughly resembled the Brahmi *ta (Ancient India,* No. 16, p. 7, PL H). The pottery included a few sherds of 'knobbed' ware and a lid of grey ware com-

parable, to the shapes found at Jaugarh and Sisupalgarh. The iron objects found from the site show affinity with a similar material from Sisupalgarh.

71. Excavation at Khalkatapatna, District Puri.— J.S. Nigam, assisted by Amarendra Nath, K.M. Suresh, A. Jha, P. Biswas, P.N. Biswas, M.P. Singh and K.K. Verma of the Excavation Branch carried out an excavation at Khalkatapatna, 11 km east of the Sun-Temple, Konarak on the left bank of the River Kushabhadra with a view to investigate the nature of the deposit. The mound was extensively damaged by quarrying the earth to construct the marine Drive Road connecting Konarak and Puri. The excavation revealed a single culture habitation. The Chinese celadon ware along with the egg-white glazed and glazed chocolate ware of Arabian origin were found with the indigenous pottery. These were occurring throughout the deposit. The indigenous pottery is generally of dark grey colour. The occu-rrence of red ware is scanty, some of the red ware sherds indicate use of red slip. The shapes are common in both the wares, viz. bowls, basins, *handis,* vases, miniature pots and beaked lamps. The entire pottery is wheel-turned. A few specimens bear mat-impressions and some others have stamped geometrical designs confined to the neck or waist.

No structural remains were encountered in the excavated area. However, the remains of a brick *jelly* floor, oven and a hearth were exposed. Several ring-wells were also noticed. In the habitation area perhaps on either side of a back lane, a group of four to five ring-wells were noticed, each is supposed to be connected with a house. It is difficult to suggest if they were used as draw-wells. On the contrary, their proximity to each other suggests that these were used as soakage pits. However, it has been observed that the use of the rings in the draw-wells is a living practice in Puri and Cuttack districts.

The discovery of a complete and two fragmentary Chinese copper coins, with the charac-teristic square perforation in the middle bearing legend in Chinese characters on both the sides, the Celadon ware and the egg-white glazed and glazed chocolate wares from the Arabian countries conclusively suggest that Khalkatapatna was a port-town having maritime trade both from the east as well as from the west. The location of the site also lends support to this view because the river Kushabhadra falls into the sea about 3 km to the north-east of the site. The estuary of the Kushabhadra would have provided ideal facilities for the ships to berth near the site. On the basis of the material evidence, the site was under occupation between *circa* twelfth-fourteenth century AD.

72. Exploration in District Puri.— Amarendra Nath, assisted by K.M. Suresh, P.N. Biswas, P. Biswas, M.P. Singh and K.K. Verma of the Excavation Branch (IV) of the Survey, discovered a deposit of more than 3 m in height belonging to an early historical period in the neighbourhood of Bhaskareswar, Brahmeswar and Meghaswar temples. The surface finds included shapes like bowls, dish and lid. The other finds included terracotta, gamesman, ear ornaments, animal figurines, beads and an iron nail. In one of the cuttings (at the site to the west of Bhaskareswar temple) a mud-floor with two post-holes was noticed.

A deposit of about 7 m belonging to an early historical period on the right bank of the river Gangua (ancient Gandhabati near Santarapur burning ghat) was examined. The exposed

lateritic block wall on the periphery of the mound revealed a structure of early historical period. Besides the pottery of early historical period, a neolithic celt on chert was also found.

J.S. Nigam assisted by Amarendra Nath, K.M. Suresh, M.P. Singh and K.K.Verma also explored the area around the famous rock-edicts of Asoka at Dhauli and noticed a deposit of 3 m in cutting. The exploration revealed that the early historical habitation extended in a radius of more than one km. Traces of earthen fortification were noticed in the neighbourhood. Besides, early historical pottery, a barrel-shaped camelian bead, an arecanut-shaped bead in terracotta, gamesman and hopscotch were picked up.

A medieval site at Gop, located to the north of Akhandaleswara temple, was also discovered.

J.S. Nigam revisited Palaspur Sasan a medieval site on the river Daya, which was earlier explored by D.R. Pradhan, Registering Officer, Bhubaneswar. The mound has been extensively destroyed both by erosion and by digging for earth. The pottery included dark grey and red wares, the latter being less in frequency. The shapes included bowls, dishes, basins, vases, *handis* and lamps. The other finds included a terracotta animal figurine and arecanut-shaped beads. A few ring wells were also noticed at the site.

73. Exploration in District Sundargarh.— In continuation of the previous year's exploration in the Brahmani Valley *(1983-84,pp.* 166-67), Pradeep Kumar Behera and Shivendra Singh Adhikari of the Department of Ancient Indian History, Culture and Archaeology, Banaras Hindu University, carried out trial excavations at three different sites under the supervision of P.C. Pant and Vidula Jayaswal. The objective was to ascertain the stratigraphy and potentialities of the Upper Palaeolithic and Neolithic cultures of the region.

The first site selected for the exploratory sounding was Bisra, about 18 km north-east of Rourkela, on the eroded cliff surface on the right bank of the Bisra *nullah,* a small tributary of the south Koel. Two trenches, measuring 3 x 2 m and 3 x 2.5 m were excavated at two different places of this Upper Palaeolithic site, the upper surface of which has undergone severe erosion. While the upper deposits of the cliff have been completely eroded, Upper Palaeolithic artifacts were found in a very thin horizon of about 5 cm thickness of the massive deposit of reddish silt. This tool bearing horizon appeared at a depth of 96 cm in the Trench 1 and 40 cm in the Trench 2. The chief raw material of the artifacts is milky quartz, though examples of black chert, red jasper and haematite have also been occasionally encountered. Unfinished blanks, comprising cores, flakes, blades, bladelets and chips far outnumbered finished tools, which also included retouched and backed blades and bladelets, besides lunate, points and scrapers were noticed.

The second is a neolithic site in the village Deoposh. The site itself lies on the northern extreme of a hill locally known as Burhapahar, on the left bank of the Brahmani, about one km. east of the village, situated at a distance of about 8 km south of Bonaigarh township. Two small trenches measuring 1.5 x 1.5 m and 2 x 2 m were laid at two different localities of the site, one yielded numerous potsherds of grey and coarse-gritty red ware and the other strewn

with countless waste flakes and a few neolithic celts. The Trench 1 revealed a deposit of about 50 cm divisible into three distinct layers, resting directly over the reddish deposit of stone fragments washed down from the hill. The upper layer is formed by a light reddish brown silty gravelly sand, about 10 to 12 cm in thickness, which did not yield any cultural material. The second layer is composed of light coloured gravelly sand, measuring 10-15 cms, which was found to be the cultural horizon of the site. The lowermost layer is composed of lateritic gravelly sand, which is also devoid of any sign of human activity. The cultural material from this Trench included sherds of grey and coarse gritty red ware, mostly wheel-turned and ill-fired, recd-impressed burnt clay and two dolerite chips, presumably taken-off during the process of manufacturing neolithic celts. The second trench yielded only dolerite waste flakes and a solitary unfinished bar chisel at a depth of about 10 cm. However, no potsherds were encountered.

The third is again an Upper Palaeolithic site near the village Bamanmara, nearly 3 km south of Jangra. Two trenches measuring 3 x 2 m and 2 x 2 m were laid at the factory site. The trcnch-1 revealed a deposit of about 1.30 m, divisible into three layers, over the bed rock. The uppermost layer is that of yellowish sandy silt, measuring about 30 cm from the lowermost part of which were found highly patinated flaked nodules and chips of dolerite. They can perhaps be associated with the Neolithic industry of the region. The second layer is composed of reddish silty sand, the lowest part of which appears to be the Upper Palaeolithic horizon. It yielded five blades and three flakes of chert. The lower most layer of pale whitish brown silty clay with homogenous distribution of leached *murams* proved unimplementiferious.

The second trench revealed a thin deposit of 33 cm only which was divided into two layers of light brown fine sandy loam and reddish coarse sandy loam. The artifacts were encountered at the base of the second layer lying just above the undulating bedrock. The few finished tools found in the two trenches include retouched blades, bladelets, flakes, lunates, backed-bladelets and a few triangles, the chief raw material being chert. Though exhibiting general agreement, the Upper Palaeolithic industries of Bisra and Bamanmara differ from each other in techno-typological details.

Besides the above, some early historical mounds yielding Pre-N.B.P. and N.RP. bowls and dishes of black slipped ware along with a few neolithic celts and ring stones were also located at Dadhari, about 8 km north of Bisra township.

PUNJAB

74. Exploration in District Ludhiana.—J.M. Thapar of the North-western Circle of the Survey, in course of Village-to-village Survey discovered the following sites:

Tehsil	Village/site	Cultural assemblage
Jagraon	Jagraon	Early medieval pottery
-do-	Kotli	Early medieval pottery

Tehsil	Village/site	Cultural assemblage
Jagraon	Parait	Late Harappan pottery
-do-	Raikot	Remains of ancient town and Gurudwara
-do-	Salempur	Kushan site

75. Excavation at Sanghol, District Ludhiana.— The Department of Cultural Affairs, Archaeology and Museum, Punjab, carried out excavations at stupa and monastery complexes. Although excavations were carried out at this site from 1968-72 and79-80, the complete and exact plan of the stupa complex was not clearly known and a fresh excavation under G.B. Sharma, assisted by K.K. Rishi and Kuldip Singh Sidhu, was taken up. The site revealed in the past sculptures numbering one hundred and seventeen in total consisted of sixty-nine upright pillars (four sculptured comer pillars, fifty-eight with images on one side and lotus patterns on the other, seven double sides upright pillars),thirteen coping stones and thirty-five cross-bars. These belonged to the Mathura school of art of first-second century AD.

Most of the images were of females wearing transparent drapery, ornaments and head-dresses. These were shown performing different acts on different occasions under asoka, kadamba, sala and mango trees, scenes from *Jatakas,* contemporary flora and fauna, Buddha in different symbolic forms, monks and devotees wearing drapery. Asokan pillars and a multi-storyed stupa were some other depictions in the form of engraving on pillars and coping stones. On cross-bars only lotus flowers of different aspects, bearing sepals, petals etc., were shown on both the sides.

Considering the hub as the centre, the mound SGL V was divided into four quadrants A,B,C, and D, and about fifty trenches were laid. With a view to locating remains buried deep in the middle of the stupa, excavation was conducted in the western quadrant of the hub itself. After going deep, there appeared some laid out bricks which took the shape of a radial wall partially robbed off. Eastern quadrant was taken up for further probing. Previously, the central void (hub) was considered to be of 3.24 m diameter. During vertical excavation of the central portion (void) there appeared ashes, charcoal, a casket base of grey soapstone, a tooth and some fragmentary bones.

The lid of the casket was recovered during the earlier excavations. The Kharoshti inscrip-tion on the lid reads *Upasakasa Ayabhadrasa.*

The spokes of the wheel were represented by brick walls radiating from the central hub of the structure. These radial walls were intersected by four successive circular walls of diame-ters of 5.04 m, 13 m and 16.30 m, the last being the peripheral one. The radial walls were 12.24 m and 32 m in the interspaces of circular walls from inner to outside. The interspaces between these walls were filled up with *kankar* and yellow earth. The extant height of a spoke was 1.18 m. The peripheral circular wall which was 30 cm wide and made of one header brick merged at four points in four square walls of 17 x 17 m each, making the uppermost square



Fig. 5. Ajmer, Bhilwara and Udaipur: Map showing exploration. *See page 66.*

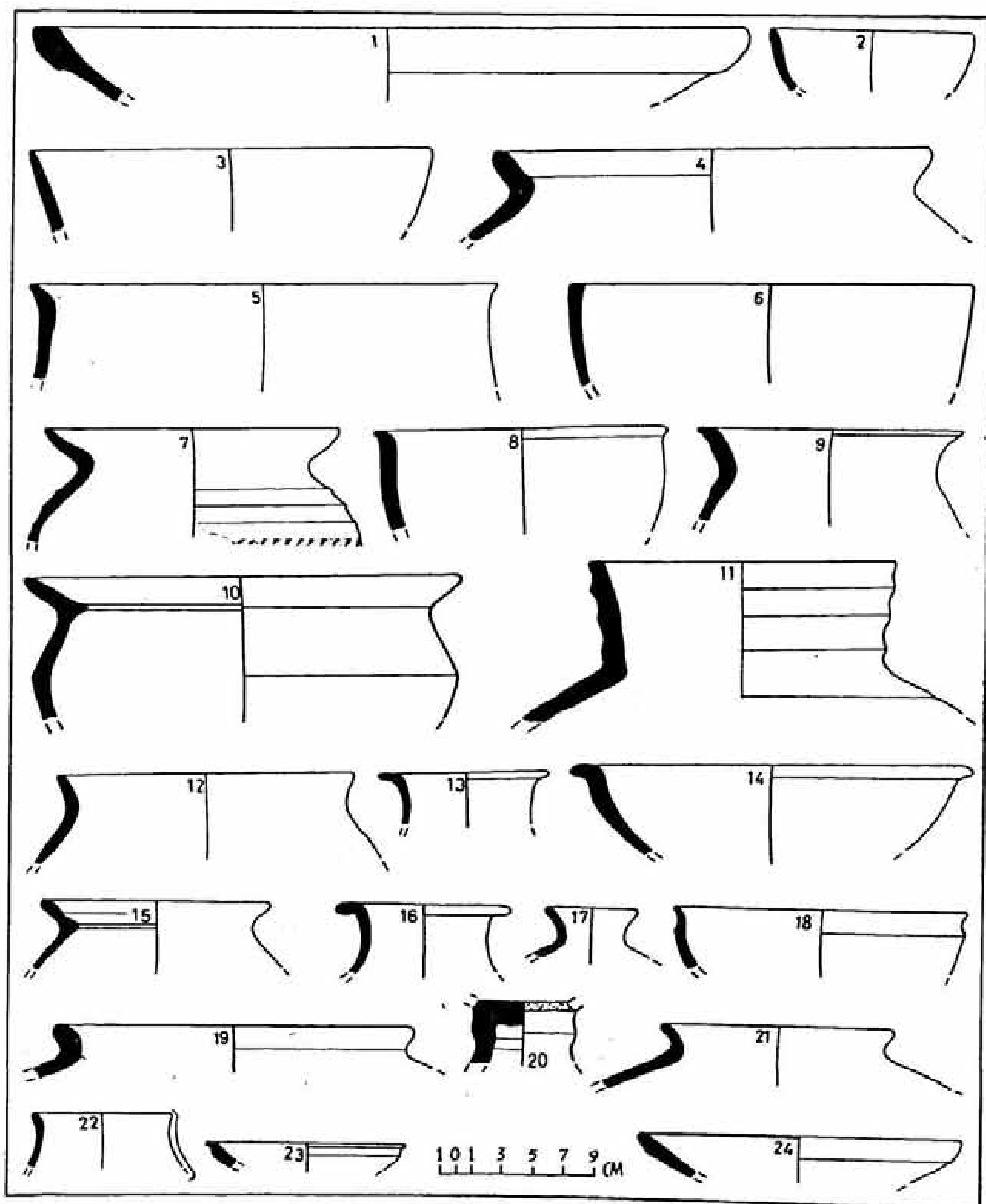


Fig. 6. Ajmer, Bhilwara and Udaipur: Chalcolithic Pottery types. *See page 66.*

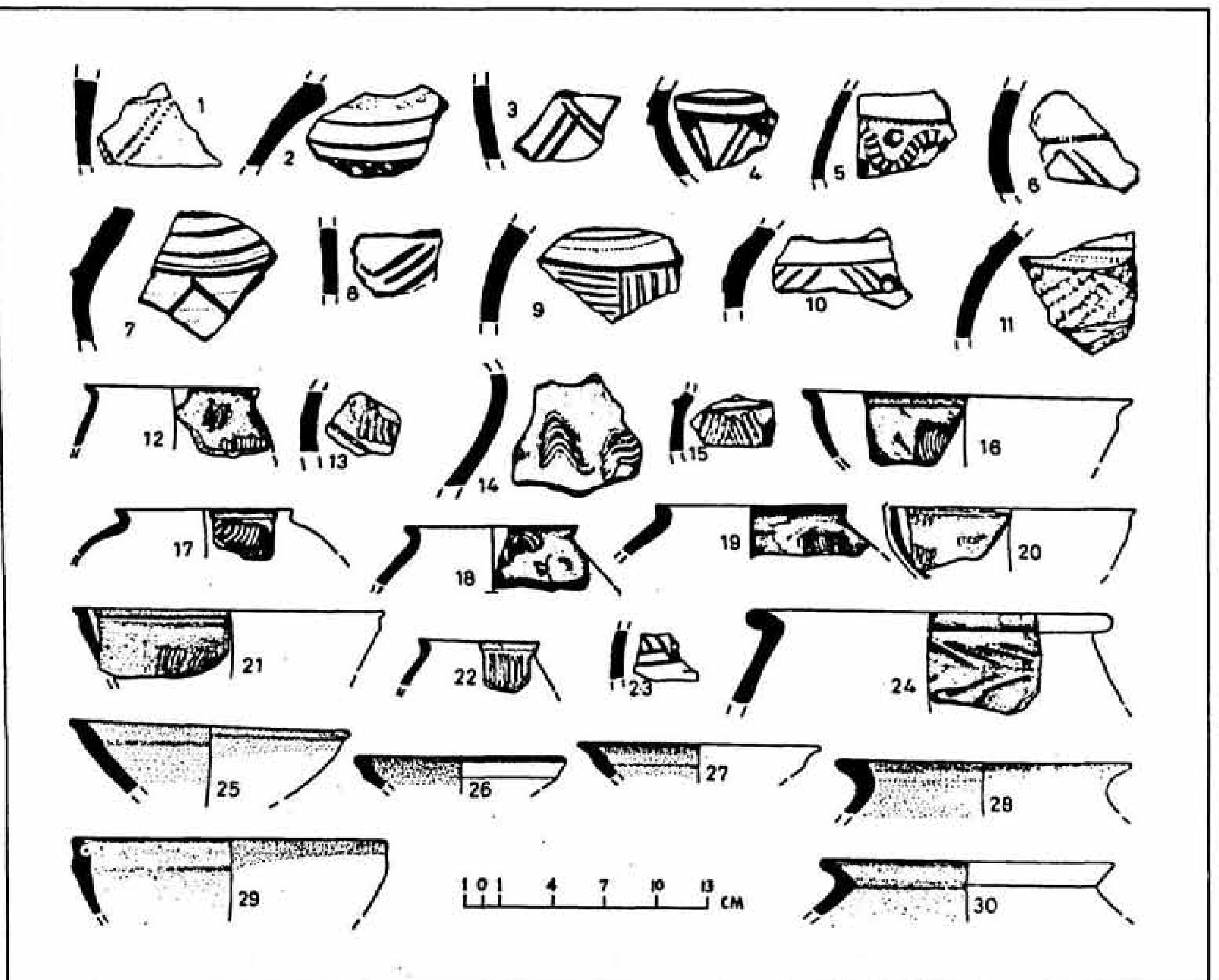


Fig. 7. Ajmer, Bhilwara and Udaipur: Chalcolithic Painted and decorated pottery. *See page 66.*

terrace running around the hemispherical dome *(anda)* of the stupa. The main stupa was possibly supported by 1.07 m thick third circular wall which at places has been robbed off. This adaptation of internal structure supports that the stupa was designed after a *dharmachakra* with its hub. Spokes and felly was an innovation in stupa architecture during early centuries of the Christian era. During further excavations towards south, cast and west, many walls and ghost walls were located adjoining the outermost radiating wall making four terraces, enlarging in size while descending from the base of the dome. The interspaces between the wall was filled up with *kankar pandu* earth. Around these terraces there was a rectangular brick pavement enclosing a *surkhi* floor. Findings of railing pillars, coping stones and cross-bars in red stone shows that a complete railing was erected around the *andakar* stupa on the top most terrace. For reaching to the *pradakshinapatha,* stairs on four sides were also traced. Towards east, three votive stupas made of brickbats in mud mortar have also been traced. Besides this an enclosure wall of brick of diam. 6.24 m connected with the pavement, having a thickness of 90 cm and height 15 cm, has also been located. Its interior was plastered with 3 cm thick lime. This circular enclosure wall was filled up with extraneous matter below, which was located in a circular heap probably a stupa of *pandu* earth.

Discovery of two square masonry pillars near the northern comer of a brick pavement indicated the presence of a gate leading to the monastery complex towards north. The details of the monastery complex are yet to be confirmed.

During the course of excavation a beautiful stucco head of Buddha and some terracotta male heads of the Gupta period were also recovered from the excavations.

RAJASTHAN

76. Exploration in Districts Ajmer, Bhilwara and Udaipur.— The Excavation Branch (V) of the Survey, under B.R. Meena, assisted by R.S. Kulkami, Y.S. Rawat and M.G. Vyas, conducted an exploration from Vijayanagar to Malkot along the upper reaches of the rivers Khari and Mansi, the tributaries of the Banas, with a view to knowing the extension of the Ahar culture and archaeological potentiality of the region. An area of about 3422 sq. km covering the Districts of Ajmer, Bhilwara and Udaipur was explored (Fig. 5) and fifty-five sites ranging from palaeolithic to medieval periods were brought to light. Of the sites, Reach Mahal, Ojena, Dantri, Unkhalia and Junikheda have yielded pottery and antiquities, resembling those of the cultural assemblage reported from Ahar (Figs. 6 and 7). It was observed that the chalcolithic people of this region usually preferred rock shelters and the slopes of hillocks surrounded by low-lying fertile land for settlement.

The explored sites along with their cultural assemblage are as follows:

District	**Taluk**	**Village/Site**	**Cultural** assemblage
Ajmer	Beawer	Dantri	Chalcolithic black-and-red, burnished grey and red wares, quartzite balls, etc.
-do-	-do-	Kasipura	Early medieval pottery
-do-	-do-	Kishanpura	Early medieval and medieval pottery
-do-	-do-	Khuntia	Ruins of early medieval fort and pottery
-do-	-do-	Lordi	Ruins of early medieval fort and pottery
-do-	-do-	Pitas	Early medieval pottery
-do-	-do-	Reach Mahal	Chalcolithic white painted black-and red, burnished grey and incised red and grey wares, terracotta bangles and wheel, ring-stone, quartzite balls and medieval pottery
Bhilwara	Asind	Antali	Early medieval site, temples and inscription and Vishnu image of eighth-ninth century AD
-do-	-do-	Barasam	Early historical red and grey wares
-do-	-do-	Barela	Early medieval fort and pottery
-do-	-do-	Chavanpura	Medieval
-do-	-do-	Devjiki Dantri	Early medieval
-do-	-do-	Dham Dhamia	Early medieval
-do-	-do-	Dhand	Early medieval, medieval pottery and terracotta animal figurines
-do-	-do-	Garhi Charbhuja	Early medieval pottery
-do-	-do-	Garwai	Ruins of early medieval fort and pottery
-do-	-do-	Hatan	Ruins of medieval fort and pottery
-do-	-do-	Junagaon	Megaliths
-do-	-do-	Junikheda	Chalcolithic black-and-red, burnished grey and red wares and medieval pottery
-do-	-do-	Katar	Palaeolithic tools, rock shelters and medieval inscriptions, coins and settlement

District	Taluk	Village/Site	Cultural assemblage
Bhilwara	Asind	Khedla Mathara	Early medieval and medieval
-do-	-do-	Lachchura	Early historical, N.B.P. associated black slipped, red and grey wares and historical settlement and ring-wells
-do-	-do-	Mataji-ki-Mangri	Gupta, post-Gupta pottery, terracot-tas, etc.
-do-	-do-	Motras	Medieval pottery
-do-	-do-	Negdia	Medieval pottery
-do-	-do-	Ojena	Chalcolithic black-and-red, grey red, burnished grey, white painted red, black on red, red slipped, red and grey wares and pottery with incised and applique figurines and quartzite balls
-do-	-do-	Palari	Early medieval and medieval pottery
-do-	-do-	Ranawaton-ka-Kheda	Early medieval and medieval pottery
-do-	-do-	Sabdara	Medieval pottery
-do-	-do-	Sangani	Medieval pottery
-do-	-do-	Sankola	Early medieval pottery
-do-	-do-	Vanwara	Early medieval pottery
-do-	Banera	Badnoni	Early medieval pottery
-do-	-do-	Charan Mata	Early medieval pottery
-do-	-do-	Jaswantpura	Ruins of early medieval fort and pottery
-do-	-do-	Lambia Kala	Early medieval pottery and inscript-ion and step-well *(Baodi)*
-do-	-do-	Rupaheli	Medieval pottery and late medieval temple
-do-	Hurda	Bhimlat	Early medieval pottery
-do-	-do-	Deopura	Medieval pottery and temple
-do-	-do-	Deoria(Raja-ka-Deoria)	Early medieval and medieval potterv
-do-	-do-	Jalkheda	Early medieval pottery
-do-	-do-	Junakheda	Early medieval pottery
-do-	-do-	Sareri	Post-Gupta and early medieval pott-ery
-do-	-do-	Sheonagar	Ruins of early medieval fort

District	**Taluk**	**Village/Site**	**Cultural** assemblage
Bhihvara	Hurda	Tonkarwa	Ruins of early medieval fort
-do-	-do-	Unkhalia	Chalcolithic, black-and-red, grey, burnished grey, and red wares and early medieval settlement
-do-	Mandal	Garhwa	Palaeolithic tool, ruins of medieval period and pottery
-do-	-do-	Gyangarh	Medieval fort and pottery
-do-	-do-	Kabraria	Medieval pottery
-do-	-do-	Kirimal	Medieval pottery
-do-	-do-	Malkot	Ruins of early medieval fort and pottery
-do-	-do-	Miapala-ka-Kheda	Early medieval pottery and terracotta
-do-	-do-	Ran ky a- Ra i-Mata	Early medieval pottery
-do-	-do-	Sanandeo	Early medieval pottery
Udaipur	Bhim	Bhaironkheda	Early medieval and medieval pottery

77. Exploration in District Ahvar.— A.K. Khanna of the Delhi Circle of the Survey explored the following sites of archaeological interest:

Tehsil	**Village/site**	**Cultural** assemblage
Thanaghazi	Ajabgarh	Medieval temple
-do-	Anagri	Temple and medieval pottery
-do-	Bhandach	Medieval
-do-	Bhangdoli	Early historical, coarse grey ware and medieval pottery
-do-	Bharisar	Medieval pottery
-do-	Bhiri	Early medieval mound
-do-	Bhoonyabas	*Chhatri* of Jamidar
-do-	Chandupara	Medieval mound
-do-	Chosla	Medieval pottery

Tehsil	**Village/Site**	**Cultural assemblage**
Thanaghazi	Duhar Chaugan	Historical pottery and medieval temple
-do-	Garh Barai	Medieval temple
-do-	Garhi	Fort
-do-	Goongraka Bas	Medieval settlement
-do-	Govindi Puram	Medieval pottery
-do-	Hameerpur	Medieval temple
-do-	Jetpura Brahman	Early medieval pottery
-do-	Kabligarh	Medieval period
-do-	Kalera	Medieval temple
-do-	Kharkari Kalan	Medieval temple
-do-	Kmka	Medieval pottery
-do-	Kyara	Medieval temple
-do-	Lalpura	Medieval mound
-do-	Malootana	Medieval temple
-do-	Mundiyabas	Medieval temple and pottery
-do-	Narhat	Medieval
-do-	Nathoor	Medieval pottery
-do-	Padak Chhapl	Medieval pottery and temple
-do-	Pipalai	Medieval pottery
-do-	Pratapgarh	Medieval fort
-do-	Raj pur Thakram	Medieval temple
-do-	Selli Boari	Early historical pottery
-do-	Toda	Early medieval
-do-	Todi Lohran	Medieval

78. Exploration in District Bharatpur.- In the course of exploration, B.S. Negi of the Delhi Circle of the Survey brought to light the following sites of archaeological interest:

Tehsil	Village/Site	Cultural assemblage
Kaman	Bakhsooka	Red ware and medieval pottery
-do-	Bhonri	Red ware and medieval pottery
-do-	Dhaulet	Medieval pottery

Tehsil	**Village/Site**	**Cultural** assemblage
Kaman	Dhcemri	Red ware and medieval pottery
-do-	Gangora	Red ware and medieval pottery
-do-	Gopalgarh	Red ware and medieval pottery
-do-	Haiwatka	Red ware and medieval pottery
-do-	Jodhpur	Red ware
-do-	Kanwari	Red ware and medieval pottery
-do-	Ladamka	Red ware and medieval pottery
-do-	Naunera	Painted Grey ware, red ware and medieval and pottery
-do-	Pahari	Painted Grey ware, red ware and medieval pottery
-do-	Papra	Red ware and medieval pottery
-do-	Peepal Khera	Grey ware, red ware and medieval pottery
-do-	Piproli	Red ware and medieval pottery
-do-	Sahesan	Painted grey ware, red ware and medieval pottery
-do-	Setwari	Red ware and medieval pottery
Nagar	Andiyari	Medieval pottery
-do-	Barkhersad	Red ware and medieval pottery
-do-	Beru	Painted Grey ware, black-and-red ware and black slipped ware
-do-	Bhooraka	Medieval pottery
-do-	Bhot	Red ware and medieval pottery
-do-	Chhajukhera	Red ware
-do-	Chirwal-Gujar	Grey ware and red ware
-do-	Gangawak	Painted Grey ware, black-and-red ware, and black slipped ware
-do-	Gulpara	Grey ware and red ware
-do-	Jaluki	Red ware and medieval pottery
-do-	Kallahedi	Red ware and medieval pottery
-do-	Kharhera	Red ware and medieval pottery
-do-	Khedli	Red ware and medieval pottery
-do-	Khori	Medieval pottery and late medieval structure
-do-	Lawan	Red ware
-do-	Manotaklan	Red ware

Tehsil	Village/Site	Cultural assemblage
Nagar	Nagar	Medieval pottery
-do-	Paltoo	Red ware and medieval pottery
-do-	Pichona	Grey ware, red ware and medieval pottery
-do-	Putli	Red ware and medieval pottery
-do-	Ranota	Painted Grey ware, grey ware and red ware
-do-	Rustampur	Red ware
-do-	Seekri	Medieval potters
-do-	Somsi	Red ware and medieval pottery
-do-	Thun	Red ware and medieval pottery
-do-	Uchain	Medieval pottery

79.Exploration in District Bhilwara.— B.R. Meena assisted by Y.S. Rawat, M.G. Vyas and V.H. Parmar of the Excavation Branch (V) of the survey explored the village Dhanop and located a historical site about 22 km east of Gulabpura. Besides two miniature sculptures, one of Jaina *tirthankara* Neminath and the other of Ganesa, and numerous fragmentary sculptures belonging to the eleventh-twelfth century A.D. were noticed.

80. Exploration in District Bhilwara.— In the course of exploration B.R. Meena assisted by R.S. Kulkami, Y.S. Rawat and M.G. Vyas of the Excavation Branch (V) of the Survey discovered a fourlined Nagari inscription (dated in V. Samvat 1778) on a pillar base of Deva narayana temple at Darawat.

81. Exploration.at Rankeshwar, District Bhilwara.- B.R. Meena, assisted by Y.S. Rawat M.V. Vyas and V.H. Parmar of the Excavation Branch (V) of the Survey in the course of exploration discovered eleven sati-pillars datable to eleventh-twelfth century AD lying in an agricultural field half-a-kilometre to the west of village Aguncha. One of the pillars bears a three-lined inscription in Nagari.

82. Exploration, in Districts Jaisalmer and Nagaur.— In continuation of last year's investigation *(1983-84* pp. 72-74). V.N. Misra, S.N. Rajaguru, Hema Raghavan, S.K. Tyagi and D.R. Raju of the Deccan College Post-graduate and Research Institute, Pune and Claire Gaillared of C.N.R.S., France, carried out geological, archaeological and ethnoarchaeological studies in general in Jaisalmer and Nagaur Districts, and particularly around Didwana in District Nagaur. During this fieldwork, a few palaeolithic sites were discovered, a number of freshly dug wells were studied which yielded data about the subsurface Quaternary geology to a depth of 50 m, a detailed stratigraphical trench was dug to a depth of 3.5 m in a previously excavated primary Acheulian site of Singi Talav and a number of shallow pits were dug to a depth varying from 2 m to 4 m below the surface for a close mapping of Quaternary sediments around Didwana. Besides, a few uncorrected uranium-Thorium series dates, on pedogenic

calcretes found in association with palaeolithic levels in 20 m deep trench of 16R, about 2 km south-south-west of Singi Talav and a few Thermoluminiscence dates of sand dune in litho unit III of 16R have helped us in establishing a fairly reliable chronological framework for Stone Age industries of Didwana. Field observation and their interpretations based on this year's studies can be summed up as follows:

i) A few Late Acheulian artifacts consisting of a diminutive handaxe, core and flakes on quartzite were found in a calcareous clay deposit (3 m thick) resting unconformably on siliceous limestone of Pre-cambrian age at Rupnagar, 20 km north of Kishangarh in District Ajmer. The calcareous clay is conformably capped by a hard pan calcrete of 50 cm thickness.

ii) Middle Palaeolithic artifacts consiting of flakes, cores, side and end scrapers and points made on creamy quartzite were located on an eroded sandstone cliff exposed along the northern bank of a palaeochannel occurring twenty-six km north of Jaisalmer and three km south of Mokal. Majority of the artifacts are fresh and a few bear polish due to wind blasting.

iii) A few Middle Palaeolithic flakes on quartz were found along the north bank of another palaeochannel, five km north of Sanu village and fifty km north of Jaisalmer.

iv) Middle Palaeolithic artifacts consisting of scrapers, cores and flakes on quartzite were found in a remnant gravel bed exposed in the bed of a palaeochannel, three km west of the village Bhojka and 33 km east of Jaisalmer.

Association of Middle Palaeolithic sites with palaeochannels in the Jaisalmer area indicates an active fluvial system during the Middle Palaeolithic times. Further geo-archaeo-logical studies of such sites will throw light on environmental changes in the arid core of the Thar desert.

As reported earlier, Singi Talav has yielded Acheulian tools in a primary or semi-primary context in a marl or calcareous clay formed in a low energy flood plain pool or in an ephemeral floodplain - dune - *playa* complex. A trench measuring 2 x 2 m at the base of an earlier level (varying from 75 cm to 1.10 m below the surface of the Talav) was dug to a depth of 3.60 m (from the top of the Acheulian tool bearing level, i.e. layer 3) in order to know whether there is any other level of Acheulian occupation below the surface of the established level. It was also necessary to know micro-variations in sedimentary characters for understanding the palaeohydrology of Acheulian times.

During excavation a good number of artifacts consisting of fresh flakes, chips (generally less than 4 cm in length and weighing less than 5 gm) and cores on greyish quartzite were found in calcareous clay at a depth of 65 to 85 cm below the base of an old Acheulian level. At a level of 2 m below the top of an old Acheulian level a few fresh flakes on quartzite were recovered. These flakes were found to be scattered on a case hardened (slightly calcretised) surface of the underlying clay thereby suggesting that early man was occupying the exposed surface of the ancient *playa*. No artifacts were found in layers below this level. Thus, the presence of an Acheulian industry is established in layers older than the main Acheulian level located in earlier excavations. After careful sampling and sieving not only were the sediments exposed in the main trench but also in a number of freshly excavated pits in Singi Talav area, opercula of gastropod were recovered from the Acheulian occupation level. These fossils were

found to be almost absent in other exposures of calcareous clay in Singi Talav area. Detailed palaeontological studies of opercula will help us in throwing some light on the environment during Acheulian times.

An attempt was made to correlate the Acheulian tool bearing calcareous clay deposits (designated as the Amarpura formation) with the well-dated fossil sand dune exposed in a 20 m deep trench at 16R, by taking a number of shallow pits between the 16R locality and Singi Talav. It was observed that the upper part of Amarpura formation contains derived Acheulian artifacts. On the basis of last four years' studies and on the basis of this year's stratigraphical studies around Didwana, the Achculian level of Singi Talav is correlated with the upper part of Unit III of 16R which has been dated by radiometric methods to the Terminal Middle Pleistocene or early Upper Pleistocene (around 150,000 years).

Most of the Acheulian sites in the Thar are confined to the eastern margin and occur in the foothill slopes of the Aravalis or its western offshoots, on pediment slopes, relict bouldery gravel beds, stabilized surfaces of sand sheets and dunes and on the shores of *playas.* The weak weathering characters of palaeosols found on fossil dunes and the relentation of calcium and magnesium salts in aeolian and pan sediments indicated that the climate was essentially semi-arid to arid during the Acheulian occupation around Didwana. Acheulian man exploited the resources, particularly easily available siliceous rocks (quartz and quartzite), present in the area. The drainage of Didwana was weak, ephemeral, disorganised and was flowing towards east-north-east. Acheulian man adapted to this low relief landscape dominated by obstruction dunes, sand sheets and interdunal water pools. Detailed laboratory studies of Quaternary sediments around Didwana are in progress and these and micropalaeontological (including palynological), investigations will throw considerable light on the man-land relationship during the Late Pleistocene in the Thar desert.

A very interesting ethnographic data was collected about a community known as Van Vagris who are found mainly in Nagaur district but also in the neighbouring districts of Ajmer, Jhunjhunu and Sikar.

The Van Vagris are a semi-nomadic people and move their residences within a radius of about 50 km. They have no land and do not practise any agriculture. The majority of them do not have a house site of their own. They keep a few goats and dogs. The main occupation of the men is hunting hares, partridges and monitor lizards. Besides consuming the flesh of these and other animals themselves, they sell it to local people to earn some money. Their hunting equipment consists of muzzel loading guns, bow and arrow, nets and traps. They are assisted in the chase by well-trained dogs. The Van Vagris are expert hunters. We accompanied some of them on their hunting expeditions and found that within a couple of hours a single individual was able to bag 1 to 2 hares and half-a-dozen partridges. During the winter season some of them take up the contract of watching the crops of local farmers for which they are paid a fixed amount of grain. Their women go about begging food from the high caste families. The Van Vagris are a very shy, timid and honest people. The local farmers never accuse them of theft or any other crime. They have developed a symbiotic relationship with the local farmers. During winter when they take up a crop watching job, they stay in one place for 4-5 months.

Rest of the year they move from one place to another in search of game. They always camp on the sand dunes outside the village. Their dwellings consist of very flimsy huts made of tree branches and grass. These huts arc very small (less than 2m in length, width and height).

The most interesting aspect of the religious life of the Van Vagris is their faith in their mother goddess. The goddess is represented by an iron trident which is kept in a metal box. This box is kept suspended from a tree. Women are not allowed to see the image or touch the box. For this reason when the Van Vagri family moves, the man who is responsible for worshi-pping the goddess moves at a distance from the rest of the family so that the goddess will not come in contact with the females. The Van Vagris' faith in his goddess is very strong and he does not undertake any major work without ascertaining the wish of the goddess. The priest does not eat food cooked by any female including his wife, mother and sister.

The Van Vagris are most probably the descendants of the Mesolithic hunter-gatherers and are persisting with the same way of life in a considerably changed environment.

83. Exploration in District Pali.— During the course of his exploration under a village-to-village Survey Scheme, R. Pathak of the Western Circle of the Survey, brought to light the following sites:

Taluk	Village/site	**Cultural** assemblage
Jaitaran	Agewa	Medieval Siva temple and *sati* stone inscri-
-do-	Bhakarwas	ption, Sati -stone and late medieval sculptures
-do-	Deoria	*Sati-stone* inscription
-do-	Jajanwas	*Sati-stone* inscription
-do-	Khera-Maharajapura	*Jivit samadhi*
-do-	Khinawari	*Sati-stone* inscription
-do-	Lumbrawas	Late medieval site
-do-	Patwa	Sati-stone inscription
-do-	Phoolmal	Late medieval site and inscription
Raipur	Asanji (Talao)	*Jivit samadhi*
-do-	Asantilolia	*Jivit samadhi*
-do-	Babra	Late medieval temples and site, inscriptions and *sati-stone*
-do-	Basia	*Sati-stone* inscription
-do-	Bhawari	Late medieval site
-do-	Biswas khurd	*Sati-stone* and late medieval sculptures
-do-	Butiwas	Late medieval Vishnu temple
-do-	Chang	Late medieval step-well
-do-	Deoli	Late medieval site

Taluk	**Village/Site**	**Cultural assemblage**
Raipur	Deoli (Kalan)	*Sati-stone* inscription
-do-	Dipawal	Late medieval Siva temple and site
-do-	Fatakhera	Late medieval site
-do-	Giria	Medieval Vishnu temple and *sati-stone* inscription
-do-	Gurhapitha	Late medieval site
-do-	Jhuntha	Medieval Siva temple and *sati-stone*
-do-	Kalakalan	Late medieval Siva temple and fort
-do-	Karanpura	Late medieval site
-do-	Kotri	Late medieval site
-do	Kusalpura	*Jivit samadhi, sati-stone* and late medieval mosque
-do-	Lawacha	*Sati-stone* inscription
-do-	Manpura	Late medieval site and 5a/i-stone
-do-	Nanna	Late medieval temple and mosque
-do-	Patna	Late medieval site
-do-	Piplia (Kalan)	Late medieval temple and sati-stone
-do-	Ramgarh (Sarotan)	Late medieval site and *sati-stone*
-do-	Rawania	Late medieval fort
-do-	Sumel	Late medieval temple and *sati* stone
-do-	Viratiakalan	Late medieval inscription and sati-stone
Sojat	Chandehi	Late medieval temple
-do-	Chopra	Late medieval Jain temple and site and *sati-stone*
-do-	Potlia	Late medieval temples," *sati-stone* inscription
-do-	Rajola-Kalan	Late medieval site and step-well and *sati-stone*
-do-	Sardar Samand	Late medieval temples, site and *sati-stone*

84. **Exploration in District Pali.—** During the course of his exploration, R. Pathak of **the Western** Circle of the Survey discovered the following important sites:

Site	**Antiquarian remains**	Period
Bagrinagar	Step-wells	Eighteenth century
Bamta	Step-wells	Seventeenth century
Baragudha	Step-well	Seventeenth century

Site	Antiquarian remains	Period
Bhinwalia	Image of Mahisasurmardini	Medieval
Chandawala nagar	Palace, step-wells	Eighteenth century
Dhanderi	Copper-plate inscription	Samvat 1434
Dudhor	Sculptures	Medieval
Hirawas	Copper-plate inscriptions	Samvat 1704, 1747 and 1759
Kharia Neev	Sculpture	Medieval
Kharia Sarmianwan	Copper-plate	Samvat 1855
Kharia Soolan	*Chhatri*	Sixteenth century
Lundawas	Step-well and sculptures	Medieval
Rairakalan	Copper-plate	Samvat 1432
Rupawas	Copper-plate	Samvat 1117
Semvar	Step-well	Samvat 1672
Surainta	Sculptures and Step-well	Medieval and late medieval

TAMIL NADU

85. Excavation at Auroville, District South Arcot— The Southern Circle of the Survey, under P. Narayana Babu, assisted by S. Rajagopalan and D. Dayalan, carried out excavation of a megalithic burial at Auroville. To ascertain the mode of burial and its contents the work was taken up this year. Two burials were tapped, and one caim packing was exposed. The excavation exposed to view the capstone measuring 1.95 x 1.70 m with thickness of 15 cm.

86. Excavation at Tiruvakkarai, District South Arcot.— The Department of Ancient History and Archaeology, University of Madras, under the direction of K.V. Raman, assisted by C. Krishnamurthy, S. Gurumurthi, P. Shanmugam, A. Ekambaranathan and other technical Staff and Students, conducted excavations of a megalithic site at Tiruvakkarai.

Hundreds of megalithic burials had been found on an elevated area adjacent to the fossil-wood abounding/ yielding rocky region, protected by the Geological Survey of India. The burials had a single .circle of boulders of different size, with an average diameter of 3.50 m. Four megaliths, TVK-1, TVK-2, TVK-3 and TVK-4 had been selected for excavation. The caim-packing in all these four burials, had a thickness of 10 to 15 cm. Further digging below the caim packing revealed the outline of the shallow burial pits, with a diameter of

2.50 m. The contents of the burial pits had been carefully and systematically excavated and in the course of the digging, small boulders and a few roughly dressed stone slabs had been encountered. Side by side, very little Black-and-Red Ware pieces and coarse red ware sherds had also been recovered.

In TVK-1, the capstone, which was used to cover the burial-um, was found in a disturbed manner. In none of these burial pits were found either skeletal remains or grave goods though some of the burials, disturbed by local people yielded fragments of urns. The loose soil-contents of the burial pits, the disorderly occurrence of boulders, stone slabs and the absence of skeletal remains in these excavations would show that the burial urns had been robbed off by people, who might have had the impression of treasure trove hidden in these megalithic tombs.

87. Exploration in District Tirunelveli.— M. Raman Namboodiri of the Southern Circle of the Survey, while carrying out the village-to-village Survey of antiquarian remains, discovered a Siva temple at Ponpoli belonging to the late Pandya period.

TRIPURA

88. Excavation at Shyamsundar Tila, South Jolaibari, District South Tripura.— J.S. Nigam, assisted by Amarendra Nath, K.M. Suresh, A. Jha, M.P. Singh, P. Biswas and P.N. Biswas of the Excavation Branch (IV) and Puran Singh and Rajbir Singh of the Headquarters office of the Survey carried out a small scale excavation at the stupa site which was noticed earlier *(1965-66,* p.83 and *1969-70,* p. 61), with a view to exposing the brickbuilt stupa complex. The mound locally known as Shyamsundar Tila, lies in the village South Jolaibari in Bilonia Sub-Division of the district. Once an extensive mound, it has been gradually cut and levelled up for cultivation and what remains measures approximately 45 x 45m. The entire mound was covered with plants and trees. The upper part of the Stupa was missing. The mound was divided into several grids. On the southern slope of the mound due to trees, a limited area 8 x 7 m was subjected to digging.

The excavation revealed the south-western comer and the recess on the southern face of the Stupa (STR-I), measuring 75 cm north-south, 1.53 m east-west with extant height of 2 m having thirty-eight courses of bricks laid in mud mortar. The twenty-two courses from the bottom had a layer of bricks with round edges, and the courses above were slightly inset. The recess running towards the east has seven courses of bricks. Below this level the stupa was found damaged. Various sizes of bricks that were used and laid in English bond, measured 34 x 20 x7 cm, 31 x 21 x 5 cm, 23 x 19 x 5 cm, 22 x 18 x 5 cm and 19.5 x 17 x 4.5 cm. The composition of the stupa debris suggests that the core of the stupa was filled with brickbats and *brick-jelly* with earth as indicated in the section. The stupa was possibly enclosed by an enclosure wall on all the sides as suggested by the two walls. The east-west oriented wall (STR-II) measuring 6.25 x 1.40 x 1.58 m has retained twenty-six courses of brick and is 1.54 m south of the stupa. Its return wall (STR-III) on the west, running south-north measuring 2.32 x 1.36 x 1.58 m has retained twenty-eight courses. The southern face of STR-II and the

western faces of the STR-III and STR-IV have recess 85 cm above the paved pathways. In the recesses moulded terracotta plaques were fixed (PI. 23). The brick paved pathway (STR-V) running by the side of the walls (STR-II and IV) is 1.30 m to 1.25 m wide. It seems both complete bricks and brickbats have been used in the pavement.

A number of moulded terracotta plaques depicting sitting Buddha, flying *gandharvas,* warriors, dancers, *chakra* and lotus flowers, animals like lion, horse, bull, boar, some composite winged animals like swan, tortoise, snake, were also recovered. A few decorated bricks have also been unearthed. One of their edges bears the ornamentation which includes lotus petals, stepped pyramid pattern, honeycomb design, two horizontal wavy lines with a thick mid-band.

Moulded terracotta plaques had been recovered from Paharpur and Mainamati, the two famous Buddhist centres. The moulded terracotta plaques recovered from Shyamsundar Tila bear close resemblance with the above group. The Buddhist complex here may be assigned a date between the ninth and tenth century AD.

89. Excavation at Thakurani Tila, Paschim Pilak, District South Tripura.— J.S. Nigam, assisted by Amarendra Nath, K.M. Suresh, A. Jha, M.P. Singh, P. Biswas, P.N. Biswas of the Excavation Branch (IV) and Puran Singh and Rajbir Singh of the Headquarter's office of the Survey, carried out a limited excavation at the site with a view to ascertain the position of a half-buried giant size sculpture of Surya and the shrine and to expose the brick structures visible on the surface of the mound exposed due to erosion. A trench 10 x 10 m was laid in a comparatively vacant land of the mound on its western fringe, and western half of the square was subjected to digging. A platform of bricks laid in mud mortar having a giant size sandstone sculpture of the standing Surya was partly exposed. This platform was the sanctum of the shrine. The sanctum (STR-I) measuring 5.25 m east-west and 5.40 m north-south has a 1.30 m wide wall around, retaining thirty-six courses of bricks up to a height of 2.03 m (P1.24). The space inside was filled with earth. The door opening is 2.10 m from the southern end of the sanctum. There was a rectangular socket for fastening the wooden door frame at the level of thirty-one courses of bricks. The span of the door opening was possibly 1.80 m wide. The half-buried and tilting back Surya image is in front of the door opening and its exposed part measured 2.12 m high and 1.60 m wide. The bricks used in the sanctum measured 33 x 24 x 5 cm, 30.5 x 24 x 8 cm, 26 x 20 x 7 cm, 24 x 23x 6 cm and 24 x 15-x 5.5 cm. The bulging out of the sanctum walls indicates that the weight of stone sculpture is responsible for its sinking and causing the bulge. On the southern face of the sanctum, a sandstone sculptured panel is fixed at the south-western comer measuring 38 x 26 cm. It is badly weathered and beyond identification.

The shrine was enclosed on all sides (?) by brick walls. The wall (STR-II), running north-south measuring 12.36m in length was exposed to a length of 9.30 m only, the width is 1.47 m and extant height is 72 cm having thirteen courses of bricks. The various bricks measured 29 x 27 x 5 cm and 26 x 23 x 5 cm. The return wall (STR-III) on the north running east-west has been partly exposed and robbed to a large extent. Its available length is 80 cm and width 1.50 m. It has retained only four courses. The other return wall (STR-IV) on

the south, running west-east has also been partly exposed to a length of 1.67 m and is 42 cm wide. It has retained thirteen courses of bricks. The building level of the enclosure walls is at a higher plane than that of the sanctum. It is difficult to say as to how many brick courses of the sanctum and the enclosure walls are in foundations as the filling is done by the natural soil. The shrine complex on stylistic considerations of the Surya image may be dated to *circa* thirteenth century AD.

UTTAR PRADESH

90. Excavation at Fatehpur Sikri, District Agra.— In continuation of last year's work *(1983-84,* pp. 81-83), the excavation at Fatehpur Sikri a National Project, was resumed under R.C. Gaur, assisted by J.M. Siddiqui, K.K. Mohd., Shami Alam Nasir Hussain Zaidi, Mohd. Abid, Q.S. Usmani, Mohd Anis Alvi, Zahid Hashmi and Gulam Mujtaba.

The work was undertaken in five areas, viz., (i) Church area *(Khushbu-Khana);* (ii) Zoo area; (hi) Abdur-rahim Khan-i-Khanan's palace complex, (iv) Stable near *Hauz-i- shirin* and the Zoo; and (vi) the *Samosa-mahal* area.

Last year's excavation has brought to light the remains of a *Khushbu-khana* near the palace boundary adjacent to Diwan-i-Am towards south of the Turkish hammam and on the right side of the metalled road joining the southern gate of Diwan-i-Am and the so-called *Dafter Khana*. Later on Akbar turned these structures into a Chapel to provide accommod-ation and a place of worship to Christian Fathers who had come from Italy and Spain to meet him. Identification of this place could be possible on the basis of the account left by Father Mosserrate. The original building was not dismantled and only suitable alterations and additions were made as desired by the Fathers. A small portion of this chapel was exposed last year. This entire complex containing three rooms measuring 5.2 x 3.85 m, 2.45 x 3.85. m and 3.1 x 2.5 m respectively, starting from the east, were exposed. In all there were three successive floors. It appears that the earliest one belonged to the *Khushbu-Khana*. Over this a new floor, almost similar to the earlier one, with lime plaster was constructed for the Church. It was about 14 cm thick including 11 cm thick packing rammed with tiles and stone chips. While the orginal floor of *Khushbu-Khana* in two rooms had lime plaster, in the third it was paved with red sandstone slabs each measuring 1.2 x 0.45 m. These were however robbed off.

The second room is noteworthy because of its three niches each measuring 75 cm x 60 cm. Perhaps this was the main room of the Church having an altar. While the first room had one door 1.2 m wide, in the second room there were originally three doors. However, two of them were closed with the bricks while converting the building into the Church. Its baptistery could not be identified. Either it was in the east beyond these rooms or even the third room could have been used for the purpose.

Excavation was also resumed on the northern part of the ridge on the slope *near Hauz-i-Shirin* to expose the remaining part of the so-called Zoo (leopard cell). Here the trained wild animals were kept to help in hunting. Last year two cells were exposed. While exposing the

earlier cells, remains of a third cell were also noticed. These cells measured 3.75 x 3.35 m and 3.15 x 3.35 m having a uniform height of 1.8 m. Each cell has about one metre wide entrance. Though only three cells were found, their common back wall was of considerable length (extant length being 40 m) indicating that there were several such cells. The existance of another row of the cells cannot be ruled out. Some of these cells probably were divided into two parts by a partition wall having an opening in the centre. This was deliberately done to shift the animals from one part to another to clean the cell and to provide food and water. Behind these cells remains of big rooms were exposed. One of them measured 5.9 x 3.55 m. The exact purpose of these rooms could not be determined. It could be for the keepers of the animals or to store the food, etc. for the animals.

The work was also resumed in the stable area to the east of the Zoo on the northern side of the ridge and adjacent to a so-called mint on a higher cliff on its back. This stable has a series of feeder tanks in a row each measuring 1.65 m x 0.7 m and separated by each other by a 20 m thick partition wall. The extant length of the south wall to which the feeder tanks are attached is 44.7 m having a thickness of one metre. Stone rings have also been provided at a height of 62 cm above each feeder-tank to tie the animals. This stable which is 15 m wide is divided into two parts by a row of heavy pillars, each being 1.7 x 1.05 m thick. A major part of its frontal wall in the north has been damaged and its extant length at present is 36.9 m only having a height of 80 cm.- The row of pillars referred above stand at a distance of 4.75 m from the front wall. The arrangement of stone rings and the feeder tanks, each having a height of 1.05 m, suggest that most probably this was a place for lodging and feeding the camels for, apparently it could have been inconvenient for horses.

However, not far-off from the zoo on its western side was perhaps a horse stable. This could not be exposed during this season as the area is mostly covered by the wild growth of trees and they need clearance. Only a part of this area was cleared to expose its floor and stone rings.

Another place where excavation was resumed was the building complex generally ascribed to Mirza Abdur-rahim Khan-i-Khanan, locally known as *Purani Kotwali.* This is situated on the northern ridge on the north-west of the Agra Gate and not for-off from the adjacent Carvan Sarai. Among its extant structures are a striking vaulted domed gateway, approachable by a cross road joining the main original road of Akbar's period running between the Agra Gate and the Diwan-i-Am, and a hall on the northern end of the complex having three extant doors. Since the eastern part of the complex has been badly damaged and quarried, the western part was put to excavation. It appears that originally this building complex was surrounded by an enclosure wall and other structures. Excavation revealed an interesting house complex between the extant hall and the ruins on the western side of the gate. Successive floors were noticed one over the other, indicating that the buildings were in use for a long period. Attempts were made to expose the original layout of the complex after recording and removing the later structures. Just in front of the extant hall was a big house with a pillared verandah. A few stone slabs used for pavement were also found *in situ.* However, an interesting small octagonal fountain having a diameter of 55 cm and two small

tanks all linked with a drain were found. Most probably an exposed floor around the tanks belonged to a small courtyard of the house of which the extant hall was a part. On its southern and eastern sides were openings or doors to other rooms of the house. These rooms were of varying sizes including one measuring 5.6 x 3.75 m. It has two openings one in the cast and another in west having a flight of steps to reach a long verandah (29.06 x 6.06 m) facing a big courtyard in the western part of the complex. At the southern end of die back wall of the verandah there is square shaped water reservoir (2.04 m x 2.45 m) having a depth of 2.01 m. This is made of *lakhauri* bricks having nice plaster both inside and outside. It also has a flight of steps. The most interesting part of the complex is its big courtyard, measuring 29.08 m from east to west and 21.75 m from north to south having a pucca floor of *kankar* and lime. The courtyard is surrounded by houses on all sides. However, no structure survives now to its west due to indiscriminate quarrying except one metre thick enclosure wall which was traced to a length of 30.06 m only as it is abruptly damaged in the north.

The courtyard has a square shaped low platform (6.15 x 6.15 m) having a height of 40 cm. It has steps on its three sides except on west. Originally, the edges of the platform were covered by stone slabs. On the western side of the platform and running parallel to it, there is a beautifully constructed tank (10.09 x 11.06 m) which is divided into four small parts each being 60 cm deep. It has an octagonal fountain in the centre. The walls of the tanks as well as of the fountain are well-plastered. The latter also has a plastered floor. There is an interesting and well-built 9.7 m long platform along the tank on the western side attached to the main wall referred above. It is 1.72 m wide in the south and 1.55 m in the north. The water was supplied to these tanks and fountain from the reservoir through a well-maintained 22 m long drain running from east to west along the verandah in front of the houses on the western side. Obviously, the courtyard once had a well-maintained garden in the typical Mughal period taste.

The area around the main gate was also uncovered. On the inner eastern comer of the gate a staircase was located leading to the roof of the gate. On its opposite is a wide flight of steps leading to the main building complex. Just at the foot of the staircase a big and wide covered drain with a carved square-shaped lid was also noticed. This was to flush out the waste water of the complex particularly that accumulated during the rainy season. The drain ran underneath the gate structure having its outlet towards the southern slopes. The ruins on the western side of the gate which were once formed part of the main complex were also cleared. The general layout of the complex suggests that it was well-planned and carefully designed with all possible amenities to accommodate the family of a high noble.

The fifth place selected for excavation was the area in the vicinity of the so-called *Samosa Mahal* on the northern part of the ridge behind the great mosque and facing the lake. It extended as far as the north-west comer of the mosque marked by a circular bastion flanked by a wall running north-south to the back of the so-called Carvan Sarai. On the northern side though the vertical cliff protected the area, it had also two parallel walls all along joining another wall on the eastern side of the *Samosa Mahal.* The extant buildings of the area viz the curious triangular building *(Samosa Mahal),* the adjoining hammam with separate tanks

for hot and cold water supplied through terracotta pipe, the so-called *Hawa Mahal,* locally known as *phansighar,* an underground hammam as well as the building ruins spread extensively under debris were enough evidences to indicate the importance of this area. Therefore a horizontal excavation was planned to expose the structural remains (Pi. 25) in an area measuing about 124.3 x 63.6 m. However, only one-fourth part of it could be excavated. In all, four rooms measuring 6.45 x 6 m, 6 x 2.75 m, 10.6 x 2.75 m and 6.7 x 2.75 m respectively were exposed along with two verandahs measuring 6.5 x 3.45 m and 8.75 x 2.9 m respectively.

The house also has a courtyard (8.75 x 7.3 m) and two latrines — one for adults (6 x 2.75 m) with three seats on a raised platform and the other with a low seat. Just below these latrines there was a soakage pit. There was another verandah having a raised plinth on the outer side in the north facing a big quadrangle for a garden divided into four equal parts by two paved causeways having a tank (fountain) in the centre. Almost a similar quadrangle was also found to its west which could not be cleared. All units, except the outer verandah, of the house were inter-linked through doors and galleries. However, the house had only one entrance through a gallery from the north making the residence quite safe and secluded. The entire house is made of rubble and ashlar masonry having a fine lustrous white plaster throughout. Even the floor of the courtyard was nicely plastered which had a drain pit in a corner covered with a rectangular slab for regular cleaning of the underground drain. An interesting feature is that the dados of some rooms have excellent painted floral bands in red and blue colour. This complex has a massive back wall in its south running between the *Samosa Mahal* in the east and the wall with bastion, referred to above, in the west. Just on the back of it there is a road. The nature of the ruined structures on the other side of the road could not be determined. The entire complex, which is partly exposed now, appears to be very important. Its situation and layout are indicative that the area is an extension of the royal *haramsara* (ladies apartments). Its counterpart in the main palace obviously was not large enough to accommodate all the ladies of the *haramsara* numbering more than a hundred. The two units were linked through a door opening in the back wall of the *Kaneezon-ki-haramsara* of the main palace, having a massive wall on either side of the complex joining the above wall. This enclosure thus excluded the two houses ascribed to Abul Fazal by Smith. In all probablity these buildings were for a *madarsa.* There is a door opening in the northern wall of the mosque which opened in the courtyard of this *madarsa* (?) leading to the underground chamber through a flight of steps where Sheikh Salim Chishti was buried to enable the students to visit the Sheikh's grave to recite the Holy Quran and offer Fatiha. It appears that the two houses, like Ibadatkhana on the other side of the road, had nothing to do with the *haramsara.*

91. **Excavation at Fatehpur Sikri, District Agra.** — In continuation of the last year's work *(1983-84,* pp. 83-84) the excavation had been resumed at FPS II with a view to expose the structures in the area which lies contiguous to the western wall of so-called Treasury, extending to the Parking Ground, outside Diwan-i-Am. The excavation was carried out by the

Northern Circle of the Survey under the direction of S.S. Biswas, assisted by Ram Sharan, P.B.S. Sengar, C.P. Singh, S.K. Jain, B.B. Sur and Chijanji Lai.

The excavation revealed three rooms in a row, abutting the western wall of the Treasury. The rooms were modest and rectangular in plan but vary in dimensions, the largest measured 3.20 x 3.50 m and the smallest 1.6 x 1.10 m. A gallery measuring 2.25 x 0.75m was located in the north-eastern side of the northern room of this complex, which interconnects the great house complex, exposed during the last season. A rectangular niche, measuring 80 x 45 x 30 cm was provided in northern and western walls of all rooms for keeping things of daily use. This complex had a front verandah facing west, as confirmed by the presence of a large broken earthern storage jar, found lying buried near the western wall of the northern room. The structure was built of undressed sandstone and covered with lime plaster.

The area to the south of the main wall was also taken up. A room, rectangular in plan, measuring 3.25 x 2.90 m was found in a good condition. The floor of the room was made of lime. The walls were plastered with lime mortar and decorated with floral designs made in blue on the red background. Two entrances of identical dimensions were incorporated in the eastern and western walls of the room. The western gateway opens on to an adjoining rectangular large hall. The thick plastered walls of these rooms had niches.

Excavation in the western part of the area (near the Parking Ground) revealed a set of four rooms, measuring 3.60 x 3.00 m, 1.80m x 2.00 m, 3.30 m x 2.00 m and 3.30 x 2.00m. At the north side of this complex a flight of steps was encountered. The walls were plastered with lime mortar and the floor made of lime mixed with *kankar.* The room on the south side has a small rectangular verandah, measuring 5.75 m x 1.85 m with lime floor, edged with a border paved with rectangular slabs of red sandstone. The verandah was partitioned into two parts by a hollow wall made of reused *lakhauri* bricks set in vertically. The southern part of this verandah was used as a kitchen as confirmed by the presence of a hearth ash, charcoal and a stone mortar, lying buried in the floor. The other part of the verandah was probably used for other domestic purposes. The roof of the verandah seems not to have been flat but slanting and covered with terrocotta tiles, as evidenced by the occurrence of a large number of broken tile pieces during the excavation.

The excavation was further taken up at FPS I near Jodha Bai Palace. Important architectural members were taken out from the exposed trenches. The rectangular hall, measuring 6.20 x 5 m and the way paved with *kharanja* stones, in the western side, which were partly excavated, had been entirely exposed (P1.26). Twelve pillar bases, once supporting the flat roof were discovered *in situ.* The floor of this rectangular hall was made of lime concrete. A water channel, running parallel to the *kharanja-paved* way, was found to be covered with stone slabs and plastered with lime mortar.

Pottery included red and glazed wares and Chinese porcelain. Some of the sherds of Chinese porcelain bear designs representing human figures, landscape and floral patterns. A fragment of a crackled glazed ware had a circle, divided into four segments, each enclosing typical chevron lines. Pottery, in general, was of coarse and medium fabric, and red-ware was

of dull red colour. The entire pottery was wheel-turned. The commonest shapes met with were a shallow dish with flat base; basin with an externally-thickened rim and flat-thickened base; and, spouted vase with an out-turned featureless rim, globular body and rounded base; bowl with vertical thickened rim with convex base; and carinated cooking vase and a lid with a featureless rim and hollow oblique knob.

Decorations on pottery were based mostly on incised and stamped patterns, formed of circles and flowers with incised lines and strokes, whereas chequered patterns were designed with stamped marks, dusted with mica.

Antiquities included iron objects, cowries, fragments of glass and bangle and terracotta objects such as, lamp and human and animal figurines.

92. Excavation at Sringaverapura, District Allahabad.— In continuation of the previous season's work *(1983-84,* pp. 84-85), the Excavation Branch(II) of the Survey resumed excavations at Sringaverapura under the National Project 'Archaeology of Ramayana Sites'. The work was directed by K.N. Dikshit with the assistance of P.K. Trivedi, V.C. Sharma, K.K. Sharma, I.D. Dwivedi, R.S. Sharma, S.K. Sharma. L.S. Mamani, B.B. Sharma and J.S. Bist. The main objectives of the excavation, besides imparting training to the students of School of Archaeology, was to ascertain the details of the wide interconnecting channel connecting Tank B with the circular structure called Tank C.

The interconnecting channel between Tank B and circular Tank C was further exposed. The lower two retaining walls lying on the western side were extending further. At a distance of 12.75 m from the comer of Tank B was encountered a staircase having four steps (four treaders and five risers) connecting the middle retaining wall with the lowest one. The staircase was considered important as it was on the right-hand side i.e. western side, whereas other staircases of Tank B, were found only on the eastern side, All the steps were intact.

A portion of the top retaining wall near the turning of the circular Tank C was found damaged, and only the meeting point was traceable. As it was a circular structure a staircase with four steps (four treaders and five risers) was found connecting the top retaining wall with the middle one. However, one of the comers of the staircase was considerably damaged. The lowest retaining wall of the wide interconnecting channel which was exposed up to 7.60 m in length could not be pursued as it was found covered under the late-Kushana habitations.

In square F-5, another brick-on-edge ramp connecting the bottom of the middle retaining wall with the bed of the tank was uncovered on the left-hand side, i.e. eastern side.

On the south-east portion of the mound, the residential complex belonging to the late-Kushana period, encountered last year, was further exposed (Pl.27). The complex revealed two units separated by a corridor, having soling with brickbats and both the units were found connected through an open courtyard paved with brickbats on the eastern side. The southern unit of the complex was provided with five rooms having four small interconnecting doors. The sizes of the rooms were 2.40 x 2.05 m, 4.25 x 2.05m, 3.35 x 3.35 m and 3.35 x 2.55m respectively. The size of one room could not be ascertained. However, in one of the rooms lying on

the south-west corner of the complex, a cellar (seemingly for bulk storage of grains etc) about 2.60 m deep with thirty-eight courses of burnt-brick was encountered. The cellar was found to be almost square at the top, widening downwards and finally receding at the bottom in five tiers. From inside this thin cellar a small copper-bowl and remains of seeds and other pulses were also noticed. The northern unit of the house complex also consisted of five rooms of various sizes (2.40 x 1.95 m,4.15 x 2.25m 3.00 x 3.75m,3.20 x 3.20 m), a corridor, a verandah (6.55 x 2.00 m) alongwith several doors opening towards the courtyard. The maximum number of extant brickbat courses in the late-Kushana house complex vary from ten to thirty-five. The accumulation of heavy silt, even below a later kushana structure besides debris, may probably underscore the desuetude of the great Tank structure well within the Kushana period itself.

A few irregular brickbat walls, floors, two brick-lined hearths alongwith a round platform with two courses ascribable to the Gupta period were uncovered approximately one meter above the late-Kushana levels.

The house complex lying on the eastern side of Tank B was further excavated. In two squares, four structural phases belonging to different periods were encountered (PI. 28). The top two structural phases belonged to medieval times, whereas the third, consisting of three rooms alongwith brickbat floors was the Gupta and the lowest with walls and floors belonged to Kushana period. These structural phases confirmed that there was a continuity at this site from Kushana to Gupta and. early medieval without any break of occupation: The main baulk dividing Tank B which collapsed due to last year's rains, was partly removed and both the parts were made interconnected by exposing the retaining walls lying on the western side.

Among the important finds, mention may be made of a terracotta sealing in Kushana Brahmi characters and two sealings in Gupta Brahmi characters and terracotta human and animal figurines, rectangular and square flat tablets with and without incisions on either side, beads, bangles, balls, discs with notched designs, wheels, gamesmen, toys, dabbers and an amulet. A gold plaited glass bead alongwith semi-precious stone beads were also recovered. Metal objects included circular and rectangular coins ranging from Kushana to Gupta and medieval times, antimony rods, wire hook, *ghungroo,* nail, chisel, blades of knife, sickle, spearhead, copper-bowl and other unidentified objects. A soapstone mould, ivory dice and a few bone points were also met with.

93. Excavation at Daulatpur, District Bulandshahar.- The Aligarh Muslim University, Aligarh under the direction of R.C. Gaur assisted by N.H. Zaidi, M.A. Alvi, K.K. Mohd. Shami Alam, Q.S. Usmani, Mohd. Abid, Zahid Hashmi, Zamir Ahmad and Gulam Muitaba carried out a small scale excavation at Daulatpur.

Trenches were laid in L-shape, five trenches in a series from east to west with a total length of 50 m and two trenches from north to south having a total length of 20m The excavation has revealed that this place was actually a camp site where the O.C P people from the neighbouring areas who had their settlements on the bank of the Kali Nadi came to settle temporarily during the rainy season to save themselves from flood fury. On the northern side of this settlement, there was a big pond to supply water to the people and animals. Since the site

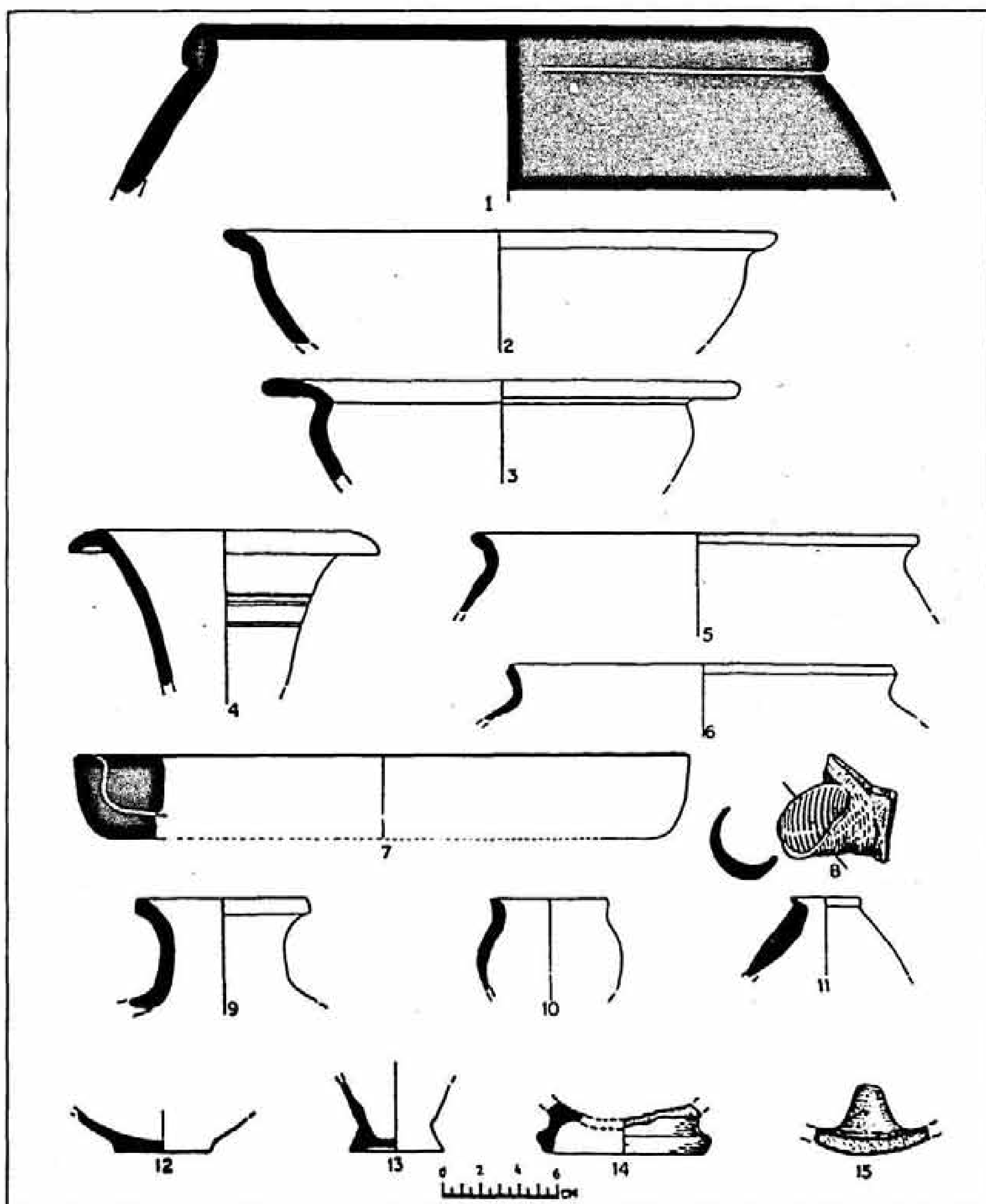


Fig. 8. Daulatpur: Pottery types. *See page 88.*

was not a regular habitational place neither complete pots nor any goodantiquity have be-en found as the people collected their belongings every season after the rains to return to their original places. This site has been a camping ground for quite a long period is evident from its successive floors with post-holes, mud-clots and plaster pieces of thatched houses. The post-holes indicated that generally the houses were rectangular in shape but sometimes semi-circular also. Three floors were traced, one just below the humus, the other scaled by layer (2) and third one sealed by layer (3). However, brickbats and plaster pieces were also picked up from the lower levels. In trench AZj (NE) there was a burnt place probably a kit-chen or fire place in layer (5).Though the burnt patches and firepits were noticed in other trenches too, no charcoal was found. The floor below the humus on the north-west corner of the habitation gives almost full plan of a semi-circular hutment having a semi-circular frontal view looking almost oblong. The floor had a series of post-holes for wattle-and-daub structure. The other adjacent hutment had left remains of a domestic hearth.

The pottery types included sherds of bowls, dishes, vases, basin, jars, troughs, dish-on-stand, lids including those with knobs, spouts and handles (Fig. 8). A few miniature pots have also been found. The spouts and handles indicated that there were spouted as well as vases and lids with various types of handles like those found at Lai Quila Bowls and cylindri-cal troughs on stand having tapering sides are noteworthy finds. Like Lai Quila, Atranjikhcra and Saipai, the pottery of Daulatpur is also devoid of Harappan influence. However, they are wheel-made, many having fine slips and are decorated with paintings and other devices.

The incised designs are not rich at the site. Most of these are in the form of incised parallel lines. However, one sherd has two mildly drawn strips forming an angle. The anti-quities included stone balls, weights, querns, pestles and terracotta balls, beads and wheels.

94. Excavation at Padrauna, District Deoria.— The Mid-eastern Circle of the Survey under Arun Kumar excavated Padrauna, ancient Pavapuri where the Jaina *Tirthankara, Lord* Mahavira got his Mahaparinirvana. The mound, measuring about 100 m east-west and 60m north-south rises to a height of about 4m from the surrounding field level. The configuration of the mound and the various reports of the previous explorers suggested the likelihood of the existence of a stupa on the western side and of the ancillary buildings such as vihara on the eastern part. In all fourteen quadrants, measuring 5 x 5 m were opened. The excavation, however, belied our expectations regarding its identification. In view of the knowledge gained through the controlled dig, the site came into existence only in the later half of the historical period.

95. Exploration in District Etawah. - During the course of a village-to-village Survey, Suresh Singh of Northern Circle of the Survey, discovered red ware of medieval period, a few-pieces of grey-ware and a dabber at Narayanpur in tehsil Auriya. The shapes included dish, basin and carinated *handi.* He also found grey-and-red ware of early historical and medieval periods and mica dusted pottery including a piece of red ware of Kushana period at Hoheri in

the same tehsil. A piece of terracotta-lamp was also discovered.

96. Exploration in District Ghazipur.— Under the scheme of village-to-village Survey of antiquarian remains, the Mid-eastern circle of the Survey explored the following sites:

Tehsil	Village/site	Cultural assemblage
Zamania	Anhayra	Red ware
-do-	Asaon	Red ware and black ware
-do-	Bawara	Red ware
-do-	Daridih	Red ware
-do-	Derhgawan	Red ware
-do-	Devaitha	Red ware
-do-	Dildamagar	N.B.P.,B.S.W.,red ware, terracotta figurines and brick structure
-do-	Dohla	Red ware
-do-	Harchandpur	Red ware, black ware, iron slag and glass bangle
-do-	Kalanpur	Saptamatrika stone panel
-do-	Kulharia	Red ware
-do-	Medinapur	Red ware
-do-	Nagsar Mirray	N.B.P., black slipped ware and terracotta beads
-do-	Raksaha	Red ware
-do-	Sevrai	B.S.W. and red ware
-do-	Sonwal	Red ware
-do-	Vareji	B.S.W. and red ware

97. Exploration in the District Ghazipur.— Rekha Srivastava under the direction of R.B. Narain of the Shampumanand Sanskrit University, Varanasi, undertook a cultural survey of the district and explored a number of sites assignable to the early historical period. The sites at Alipur Bangawan, Bisrampur, Kusumhi Kalari, Manikpur, and Sauram yielded grey, black slipped and red wares, datable to Mauryan and Sunga periods. The sites at Amadpur, Barahpur Brahmanpur, Mainpur, and Shivadas-Chak revealed only ordinary grey ware and degenerated pieces of black slipped ware and red ware. Two Sunga and Kushana terracottas were also found at Brahmanpur.

98. Excavation at Narhan, District Gorakhpur.— In continuation of previous year's work the Department of Ancient Indian History, Culture and Archaeology of the Banaras Hindu University, under the direction of Purushottam Singh assisted by Makkhan Lai, Ashok Kumar Singh and Indrajeet Singh resumed the excavation at Narhan with the objectives of ascertaining the cultural-sequence on Mound-1 and obtaining further details of the early historical settlement on Mound-2.

Mound-1, partly eroded by the river Ghaghara and partly covered by the present day Narhan village measures 425 m east-west along the river and 230 m north-south. Eight 2m x 2m test pits dug in different parts of this mound yielded one metre of thick deposit of painted black-and-red ware culture. The excavation of Mound-2 further yielded interesting details of early historical culture noted last year. The revised cultural sequence of the site Is as follows:

Period I represented by an average deposit of 1 m on Mound-1 was marked by the occurrence of white painted black-and-red ware, black-slipped ware with occasional paintings in white, red slipped ware and plain red ware. The principal pottery types in black-and-red ware were bowls, basins and vases. Dishes were conspicuous by their absence in this ware. More than 20% sherds in the fine and medium fabrics of this ware were painted.

The first settlers lived in wattle-and-daub houses. Remains of post-holes and reed marks in burnt clay lumps have been found. Mention may be made of a curious looking hearth, partly exposed in Trench 7.Although the first settlers practised agriculture, meat was an important component of their diet as is evidenced from the presence of charred animal bones, some of them having cut marks. Bones of humped Indian cattle *(Bos indicus* L.), sheep, goat *(Ovis/Capra),* remains of a wild ruminant like deer or antelope (? *Axis* sp.) and horse *(Equus* sp.) have been identified in the limited collection of bones studied so far. The small finds included pottery discs in large numbers. Of these, four pieces were perforated and might have been used as toy-cart wheels. Bone points accounted for 15 pieces and nine terracotta beads were recorded. Other finds comprised two terracotta dabbers and two balls, one each of terracotta and stone. No evidence of any metal was reported so far from the limited dig.

Period II represented by an average deposit of 90 cm on Mound-1 was marked by the absence of black-and-red-ware, either plain or painted, but the frequency of black slipped ware increased in this period. Although red slipped ware continued in limited quantity, plain red-ware was the dominant ceramic industry. The principal shapes in black slipped ware were bowls and dishes and in red-ware bowls, dishes, basins and vases. Amongst the small finds, terracotta discs appeared for the first time while pottery discs continued to occur in limited quantity. Among the bone points some interesting shapes with punched circlet designs engraved on them were noticed. Beads of glass, agate and terracotta, .daggers and balls and a terracotta figurine of a horse constituted the small finds. Iron objects included a chisel and a nail. It seems that towards the end of Period II, due to the menace of the river Ghaghara the inhabitants moved to safer places like Mound-2 and Amauli village to the north-east and west of Mound-1 respectively.

Period III was represented on Mound-2 by red-ware, thick grey ware, black slipped ware, a few sherds of N.B.P. ware and a kind of cord impressed pottery, the last one hitherto unrecorded from the sites of the middle Ganges plain, except in the neolithic context at sites like Mahagara and Koldihwa in the Vindhyan ranges which however, belongs to an altogether different tradition. Red ware was the principal ceramic industry divisible into three fabrics viz., fine, medium and coarse. The fine fabric comprised of the characteristic bowls with incurved or vertical featureless rim and a flat base, carinated *handi* with almost rounded base, reported from the middle level of this period. Basins with a nail headed externally collared rim,

lipped basins, jars with splayed out rim and a pear-shaped vase with collared rim were reported in the medium fabric. Cooking vessels were the principal type in coarse fabric. The grey-ware was generally of coarse fabric with such types as medium sized dishes with pronounced in-curved sides. Some fine sherds of this ware were comparable to those of the EG.VV. of western U.P. and Haryana. The NB.P sherds were limited in number and included dishes and bowls.

The structural remains of Period III comprised of mud brick houses associated with wattle-and-daub constructions in the lowest levels. Burnt lumps of clay with reed marks were met with. A noteworthy feature was the discovery of a storage jar buried under a house floor and a copper vessel placed in inverted position against this storage jar. Other antiquities of this period included copper and iron objects, beads, bangles, human figurines, discs, toy-cart wheels - all of terracotta from the upper levels of this period. A squarish cast copper coin having an elephant, taurine, *swastika* and *jeyadhvaja* on the obverse and tree-in-railing, taurine symbol, a three arched hill and a hollow cross on the reverse was also encountered.

Charred grains recovered from this period included rice *(oriza sativa),* barley *(hordeum vulgare),* wheat *(triticum aestivum* and *T.sphaerococcum),* kodon millet *(Paspalum scrobiculatum),* black gram *(vigna mungo),* green gram *(vigna radiata),* pea *(pisum sativum), khesari (lathyrun sativus)* and sesame *(sesamum indicum).* Fruit-stone of jujube *(ziziphus mauritiana)* and endocarp pieces of anwala *(phyllanthus emblica)* have also been recovered.

A study of the mud plasters indicated that the earliest inhabitants of Period III made .use of bamboo for pole or beam and used reed plants of *saccharum spontaneum* for their huts.

Impressions of some textile on the mud attached to a potsherd showed that the inhabitants of Period III knew the spinning and weaving of cotton fabrics.

One charcoal sample from the upper levels of Period IIIA (Sample no.B.S.564) has been dated to2200 ± 100 BP while two others, both coming from the middle level of Period III B (Sample nos. B.S. 563 and 581) gave the dates of 2240 ± 100 BP and 2100 ± 100 BP respectively.

Remains of Period IV which were recorded from Mound-2 were dominated by red-ware industry. The important shapes were bowls, dishes, vases, basins, sprinklers (P1.29) and lids. A complete specimen of sprinkler was an important discovery. Some of the sherds were decorated with stamped and incised designs. Another noteworthy find was a jar stand with three perforations. The structural remains were marked by the use of burnt bricks (size 44 x 23 x 6 cm and 50 x 26 x 6 cm). A large room having two phases of construction, made of burnt bricks and having several post-holes cut into the burnt bricks ascribed perhaps to a third phase was exposed on Mound-2. A ring-well with an inner diameter of 0.70 m and exposed up to five courses of rings to a depth of 0.80 m was found to the south-west of this room. A charcoal sample from the lowest level of this period (Sample no. B.S. 582) has been dated to 2200 ± 100 BP.

Period V was represented by red-ware with usual shapes reported from comparable levels of other sites. The structures of this period were found to be robbed by villagers.

99. Exploration in District Saharanpur.— Satish Kumar Tyagi of the Deccan College

Post-graduate and Research Institute, Pune, conducted archaeological explorations in Roorkee taluk of District Saharanpur and brought to light the following sites:

Taluk	Village/Site	Cultural assemblage
Roorkee	Akbarpur	Early medieval
-do-	Alawalpur	Early medieval
-do-	Barampur	Sunga-Kushana
-do-	Bodaheri-1	Early medieval
-do-	Bodaheri-2	Sunga-Kushana
-do-	Chauli (Sahbuddinpur)	Northern Black Polished Ware, Sunga Kushana and early medieval
-do-	Chhapar (Sherafganpur)	Sunga-Kushana
-do-	Chudiala (Mohanpur)	Sunga-Kushana
-do-	Daryapur Dayalpur	Early medieval
-do-	Hakimpur Tahra	Northern Black Polished Ware and Sunga-Kushana
-do-	Ibrahimpur-1	Early medieval
-do-	Ibrahimpur-2	Sunga-Kushana and early medieval
-do-	Jorasi	Painted Grey Ware, Northern Black polished Ware, Sunga-Kushana and early medieval
-do-	Khedajat	Late Harappan and Ochre Coloured Ware
-do-	Kishanpur Jamalpur	Sunga-Kushana
-do-	Lahboli	L early medieval ate Harappan, Sunga Kushana and
-do-	Lawa	Sunga-Kushana
-do-	Muhammadpur Jat	Sunga-Kushana
-do-	Nalhera Anantpur	Painted Grey Ware
-do-	Nawada	Early medieval
-do-	Narson Khurd	Sunga-Kushana
-do-	Raipur	Early medieval
-do-	Raipur Darera	Early medieval
-do-	Saliar Salehpur	Early medieval
-do-	Sikandarpur Bhainswal	Early medieval
-do-	Tikaula Sadatpur	Sunga-Kushana

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100. Excavation at Dihar, District Bankura.- In continuation of last year's work *(1983-84,* pp. 92-93), the Calcutta University under the supervision of Anil Chandra Pal, resumed

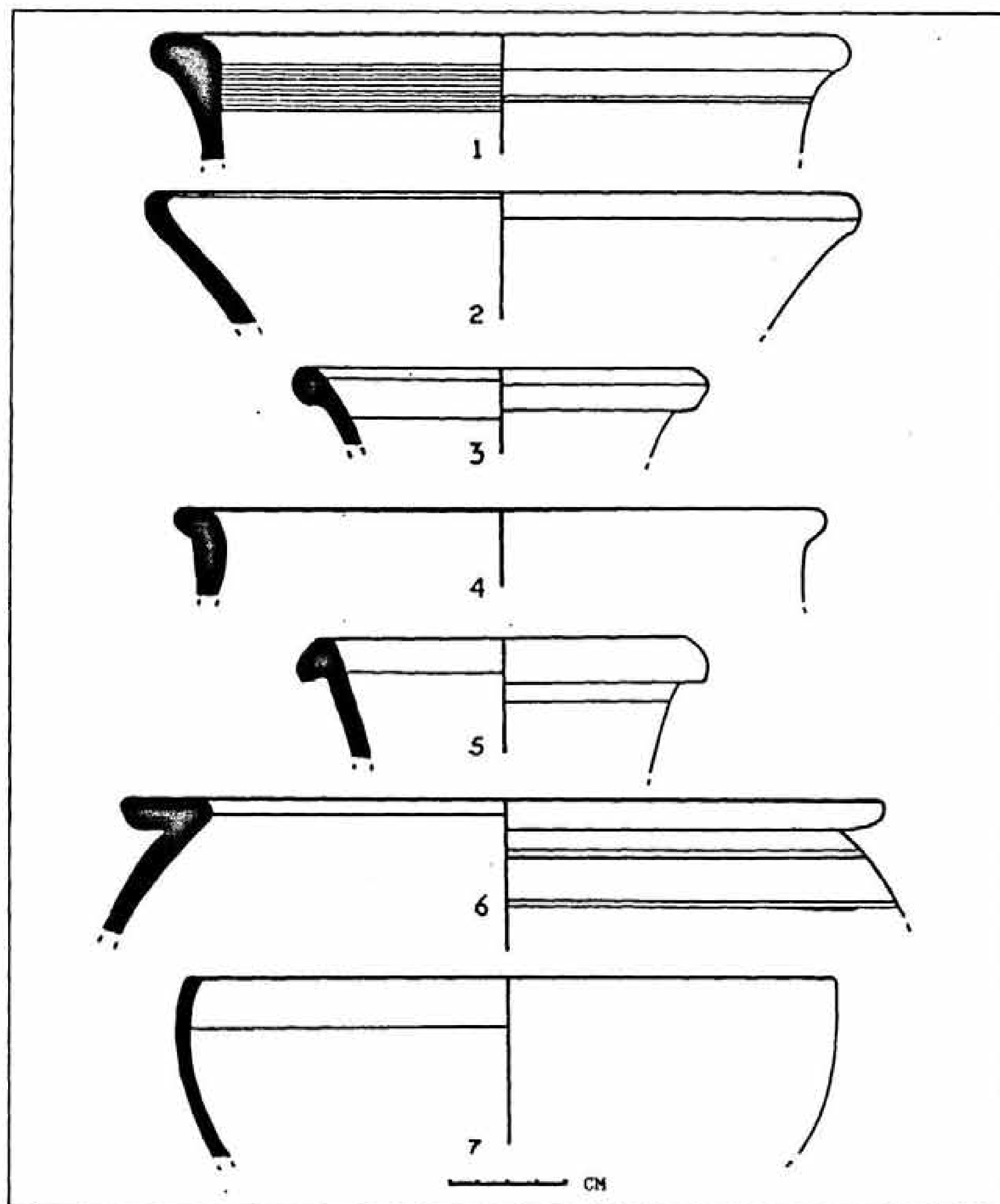


Fig. 9. Dihar: Pottery types. *See page 95.*

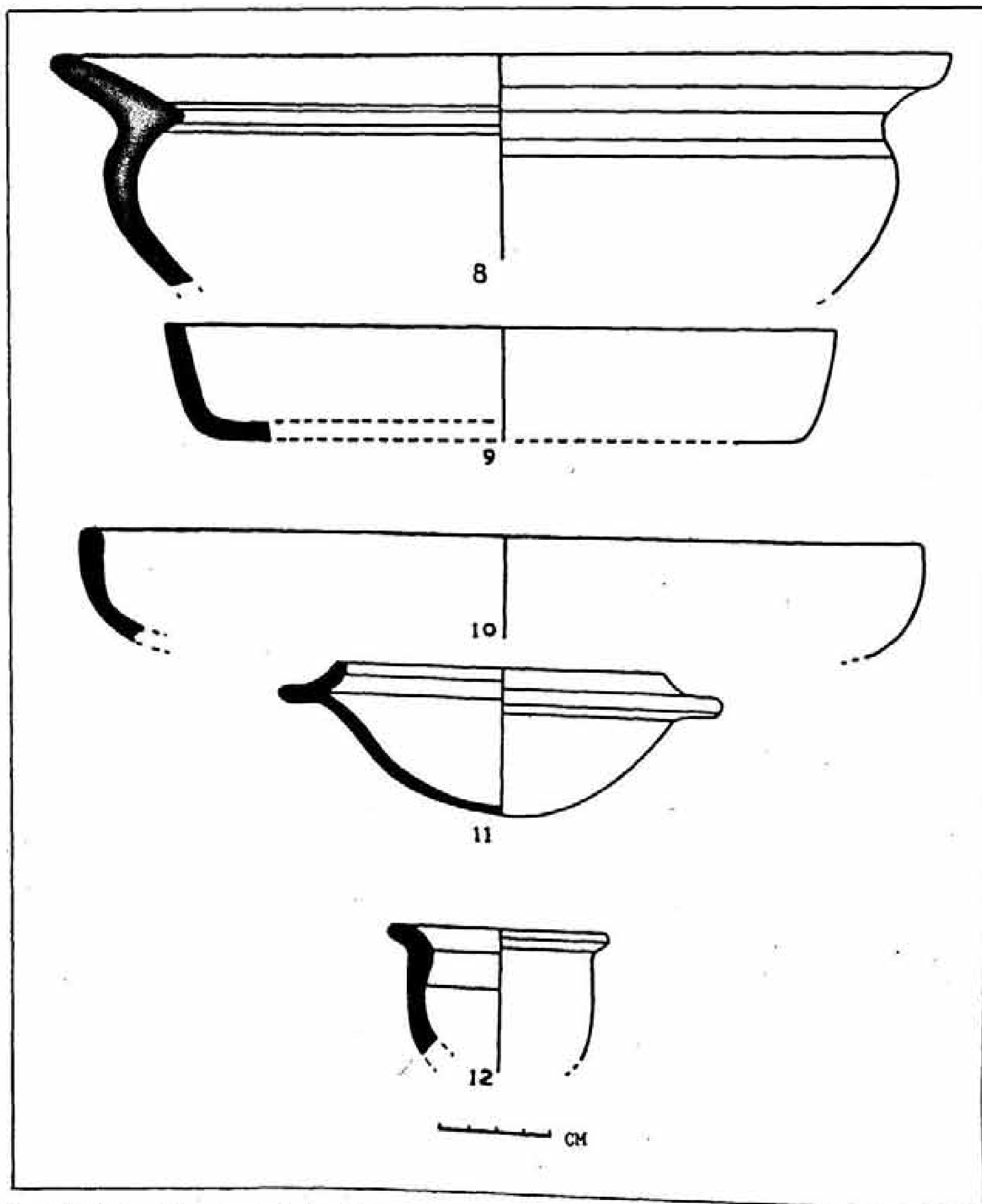


Fig. 10. Dihar: Pottery types. *See page 95.*

the excavation at Dihar to ascertain the nature of Chalcolithic culture in eastern India. In all, four trenches were dug, on the northern side of the Kana nadi, the dried bed of the river Darakeswar. It revealed, like the previous year's work that the earliest occupation of the site went back to the Chalcolithic period (Period-I), while the upper most level could be placed in the Early historical period (Period-II). The occupational deposit consisted roughly of two-and-a-half-metres in thickness and displayed seven layers, the individual material of which appeared to be a little different from those suggested in the previous season's work.

Above the virgin soil was a 2.5 m thick Gangetic silt deposit over which the first settlement of Chalcolithic people seems to have taken place. Since pottery, bone tools, copper and other finds were found, it may be surmised that some sort of a habitation must have existed at this place at this level.

Period -I (Chalcolithic period) was characterized by the occurrence of Black-and-red-ware, coarse grey-ware, red slipped ware and coarse red and grey-ware. The Black and red-ware was represented by bowls having an everted rim with a shallow bottom and were akin to typical Chalcolithic pottery of eastern India (Figs. 9 and 10). Among other things mention may be made of fragmentary remains of a mud floor built of nodules of lime and patches of mud.

A variety of bone tools, charcoal and microliths were found over the floor level. Neolithic tools were found at surface level and seemingly indicated its association with the cultural sequence of the area.

Period-II was distinguished by the materials of an early historical phase. Objects of iron such as nail, dagger, swords and copper antimony rods, terracotta game objects, beads of semi-precious stones and a few cast coins formed the associated finds.

101. Exploration in District Bankura.- In the course of village-to-village Survey, Tapanjyoti Chakraborty of the Eastern Circle of the Survey discovered following historical and late medieval sites:

P.S.	Village/Site	Cultural assemblage
Joypur	Arjunpore	Late medieval temple
-do-	Belia	Late medieval temple
-do-	Chandabil	Late medieval temple
-do-	Dhengartala	Late medieval temple
-do-	Dihipara	Late medieval temple
-do-	Gopal Nagar	Late medieval temple
-do-	Khiraibani	Late medieval temple
-do-	Layekband	Historical mound
-do-	Moynapur	Late medieval temple
-do-	Porairi	Late medieval temple
-do-	Ramnagar	Late medieval temple

P.S.	Village/Site	Cultural assemblage
Joypur	Shyamnagar	Historical mound
-do-	Sri Rampur	Late medieval temple
Patrasayer	Naricha	Late medieval temple
Sonakukhi	Basudebpur	Late medieval temple
-do-	Dhansimla	Late medieval temple
-do-	Kunda Pushkarini	Late medieval temple
-do-	Naruala	Late medieval temple
-do-	Palashdanga	Late medieval temple
Sonamukhi	Bidyadharpur	Late medieval temple
-do-	Dhulai	Late medieval temple
-do-	Nandarampore	Late medieval temple

102. Exploration in Districts of Bankura, Midnapur and Purulia.— The Directorate of Archaeology, Government of West Bengal conducted exploration in the valleys of the Kansavati and Subamrekha. The project was undertaken by S. De, D.K. Roy, B.N. Samanta, P.C. Sen and D.M. Chakraborty under the general guidance of S.C. Mukherji. The aim was to study the prehistoric potentiality of the valley. The following sites were brought to light:

District	Village/Site	Cultural assemblage
Bankura	Bandarkanda Dalambhi Ja danga	Middle and Upper Palaeo-lithic.
-do-	Chandra	Middle and Upper Palaeolithic
-do-	Damodarpur	Lower Palaeolithic
-do-	Kankradara	Lower, Middle and Upper Palaeolithic
-do-	Raktachura Raktamura	Lower Palaeolithic
-do-	Rangamatia	Middle Palaeolithic
-do-	Rupahira	Lower and Middle Palaeolithic
-do-	Sripur	Middle and Upper Palaeolithic
-do-	Supur	Lower and Middle Palaeolithic
-do-	Susuniajamthol	Middle Palaeolithic
-do-	Tentulchita	Lower and Middle Palaeolithic
Midnapur	Bangora	Iron smelting furnaces with potsherds
-do-	Dharampur	Lower and Middle Palaeolithic
-do-	Kashmar	Lower Palaeolithic and Mesolithic
-do-	Laljal	Lower Palaeolithic

District	Village/Site	Cultural assemblage
Purulia	Belcghatu	Upper Palaeolithic
-do-	Bhuchungdih	Mesolithic
-do-	Buripathri	Upper Palaeolithic
-do-	Digardih	Upper Palaeolithic
-do-	Ekro	Upper Palaeolithic
-do-	Karmarghata	Mesolithic
-do-	Khudidih	Upper Palaeolithic
-do-	Kudlung	Mesolithic
-do-	Tikartanr Chiputanr	Neolithic

103. Excavation at Pandu Rajar Dhibi, District Burdvvan.— In continuation of previous year's work the Directorate of Archaeology, Govt. of West Bengal under S.C. Mukherji, assisted by S.K. De., Dilip Kumar Ray and B.N. Samanta carried out excavation at Pandu Rajar Dhibi in the Ajay Valley. The mound was oriented east-west direction and measures 200 m x 170 m. Three trenches measuring 4mx4m, 4 m x 4 m and 3 m x 3 m were laid out.

As in previous years, the natural soil consisting of mottled silty sand (compact, hard and sticky) was reached in all the trenches. Like Birbhanpur, situated about 48 km to the south-west of Pandu Rajar Dhibi (village Panduk), the bed rock here also is composed of decayed sandstone. This mottled silty sand is believed to have withered *in situ* of the underlying rock. The depth of the trenches so dug out from the surface or top soil are 4.70 m, 3.75 m and 3.20 m, respectively and following are the cultural sequence of the site:

Period I : Dull or pale red ware and grey ware (handmade and bearing husk-impression of paddy on the core), a saddle stone fragment, fossil wood implement and bone implement were found. Only one black-on-red sherd has been recovered this year (1600—1400 BC).

Period II: Black-on-red, Black-and-red ware (one incised with criss-cross design), red ware with painted motifs in translucent white or cream, ocherous red-ware; bone implements; copper objects; beads of semi-precious stones; terracotta figurines of Mother-goddess and broken pestle; a fragmentary piece of lapis lazuli; and an iron implement were found from the upper level of Period II (1200-900 BC).

Period III: Black-on-red ware, red ware painted in translucent white or cream, decorated red ware, Black-and-red ware (Plain and painted), black polished ware, incised black polished ware, perforated ware (black and black-and-red) and buff ware (knobbed lid); bone implements; copper objects; iron implements; and terracotta beads (900—600 BC) were encountered

Period IV: Black-on-red ware, red ware painted in translucent white or cream, black polished ware, incised black polished ware, black-and-red ware (painted and plain) and decorated red ware; bone implements; beads in terracotta and semi-precious stones; and iron implements (600-300 BC) were found.

Period V: Grey ware, black polished ware N.B. P. and red polished ware; iron objects;

bone objects; terracotta heads and figurines (200 BC - second century AD) were also found. Remains of a medieval structure, probably of a shrine, and several early medieval stone sculptures of Brahmanical and Buddhist deities have been noticed in a place lying about 50 metres to the east of the mound.

There were two cultural breaks - one after Period I and the other after Period IV. The site seems to have been deserted soon after Period V and again occupied in the early medieval times.

104. Exploration in District Midnapur.— In the course of village-to-village survey, Santanu Maiti of the Eastern Circle of the Survey, discovered the following medieval and late medieval sites:

P.S.	Village/site	Cultural assemblage
Contai	Bahitrakunda	Temple eighteenth century AD
-do-	Durmut	Temple nineteenth century AD
-do-	Kishorenagar	Stone sculpture and Terracotta head
Khejri	Baharganja	Temple seventeenth century AD
-do-	Bahitrakunda	Temple eighteenth century AD
-do-	Bensgora	Temple eighteenth century AD
-do-	Bhupatichak	Temple nineteenth century AD
-do-	Birbandar	Temple nineteenth century AD
-do-	Chauddachulli	Temple nineteenth century AD
-do-	Chingurdania	Late medieval temple
-do-	Dekshin Lakhi	Temple and mound of late medieval
-do-	Debichak	Late medieval temple
-do-	Dekhali	Temple eighteenth century AD
-do-	Gar Rang	Temple nineteenth century AD
-do-	Haludbari	Temple nineteenth century AD
-do-	Jarangar	Temple nineteenth century AD
-do-	Kalagachia	Temple nineteenth century AD
-do-	Kamarda	Temple eighteenth century AD
-do-	Kasaria	Temple eighteenth century AD
-do-	Kastala	Temple seventeenth century AD
-do-	Khajuri	Late medieval mound and monument and grave nineteenth century AD
-do	Madakhali	Grave eighteenth century AD
-do-	Meidinagar	Temple nineteenth century AD
-do-	Mohati	Temple eighteenth century AD
-do-	Nijkasba	Late medieval mosque
-do-	Serkhanchak	Temple nineteenth century AD and tomb

P.S.	Village/Site	Cultural assemblage
		eighteenth century AD
Khejri	Surulia-chak	Temple eighteenth century AD
-do-	Takashi	Historical mound and sculpture tenth century AD
-do-	Tall a	Temple nineteenth century AD

105. Excavations at Ballal Dhipi, District Nadia.— In continuation of previous season's work *(1983-84,* pp. 94-95), B.V. Rao, assisted by G.N. Srivastava of Eastern Circle of the Survey conducted excavations at Ballal Dhipi and exposed further parts on the north-western side of a brick-temple.

106. Exploration in District 24—Parganas.— In the course of village-to-village survey S.K. Ghoshal of the Eastern Circle of the Survey, brought to light the following sites:

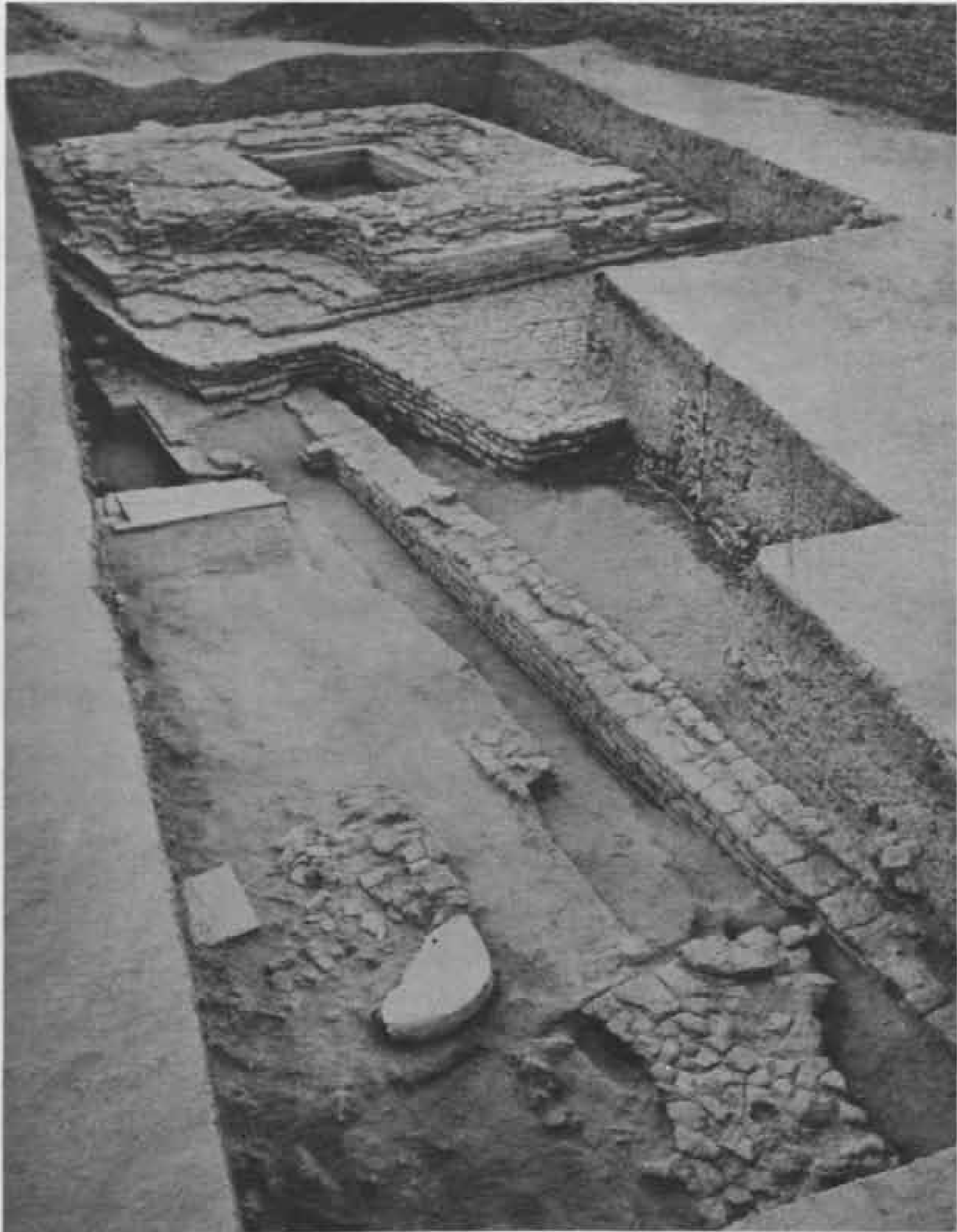
P.S.	**Village/Site**	**Cultural** assemblage
Baruipur	Sasan	Temple of eighteenth-nineteenth century AD
-do-	Sitakunda	Mounds of late historical period
Barvipur	Atghara	Mounds of late historical period
Bishnupur	Bakhrahat	Temple of nineteenth century AD
Budge Budge	Bowali	Temple of eighteenth century AD
Canning	Dabu	Terracotta head and medallion probably of Sunga-Kushana period
Diamond	Daimond	Ruined fort of British period
Harbour	Harbour	
Jayanagar	Baharu	Temple of nineteenth century AD
Mathuramur	Kankandighi	Mound of Pala-Sena period
-do-	Raydighiabad	Brick and stone structures of Pala-Sena period
Piri-Namkhana	Uttar Chandan	Late medieval mounds



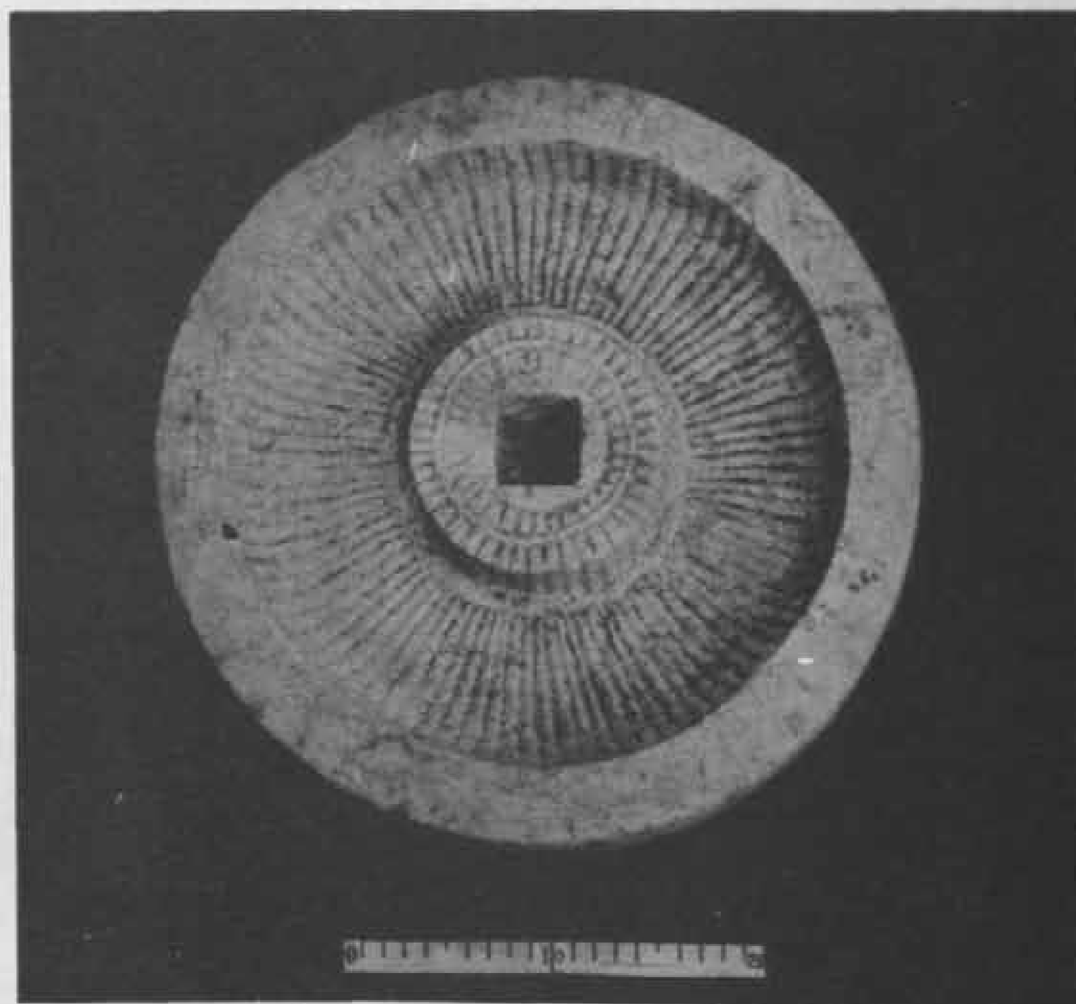
1. Vaddamanu: Inscribed limestone frieze. *See page 3*



2. Ghantasala: Fragmentary inscribed bowl, Period I. *See page 5*



3. Ghantasala: Brick structure, Period II. *See page 5*



4. Ghantasala: Limestone *chhatri*, Period II. *See page 5*



5. Peddavegi: Exposed remains of shrine. *See page 8*



6. Peddavegi: An Intaglio. *See page 8*



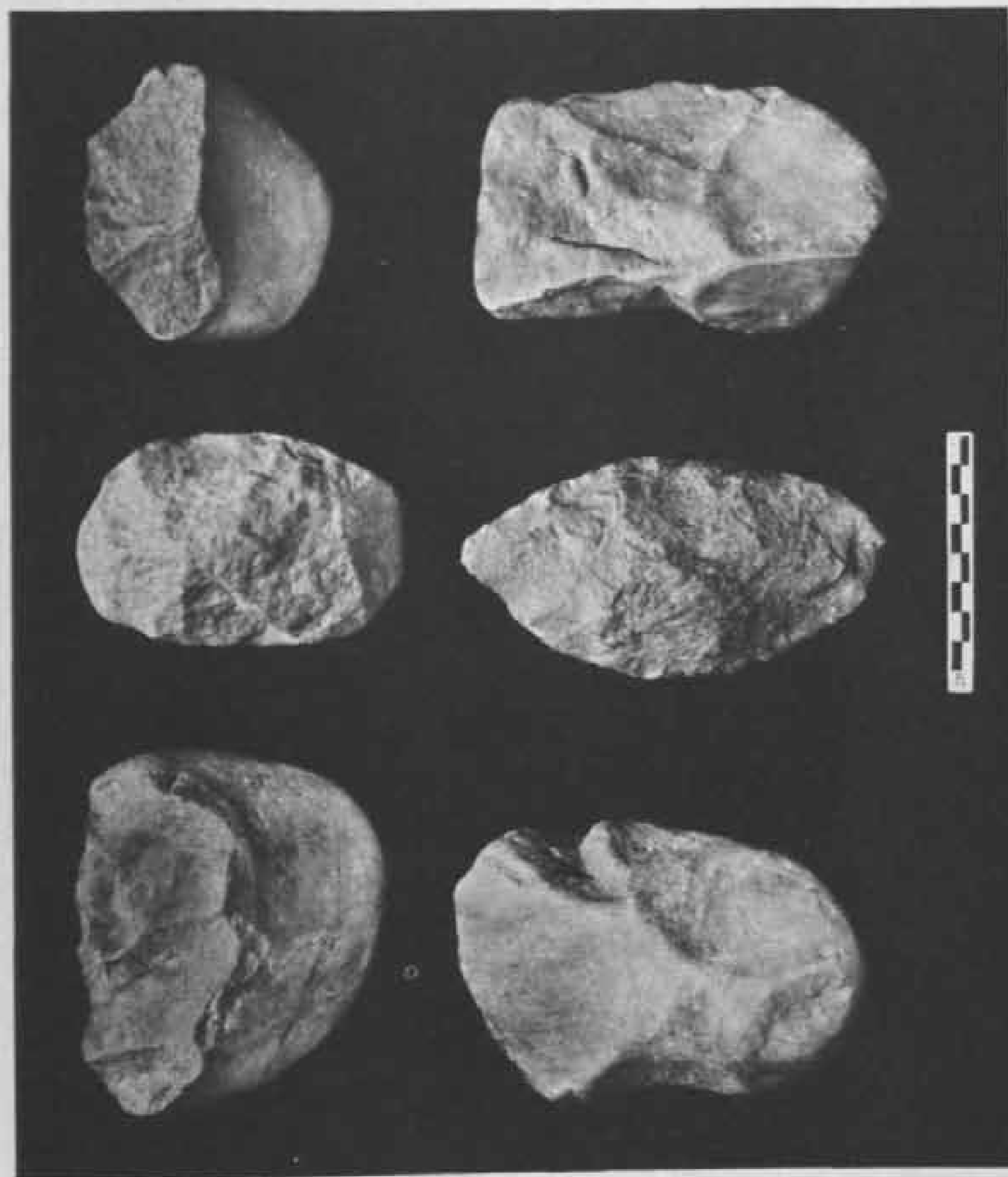
7. Taradih: Head of Bodhisattva, Period VII. *See page 11*



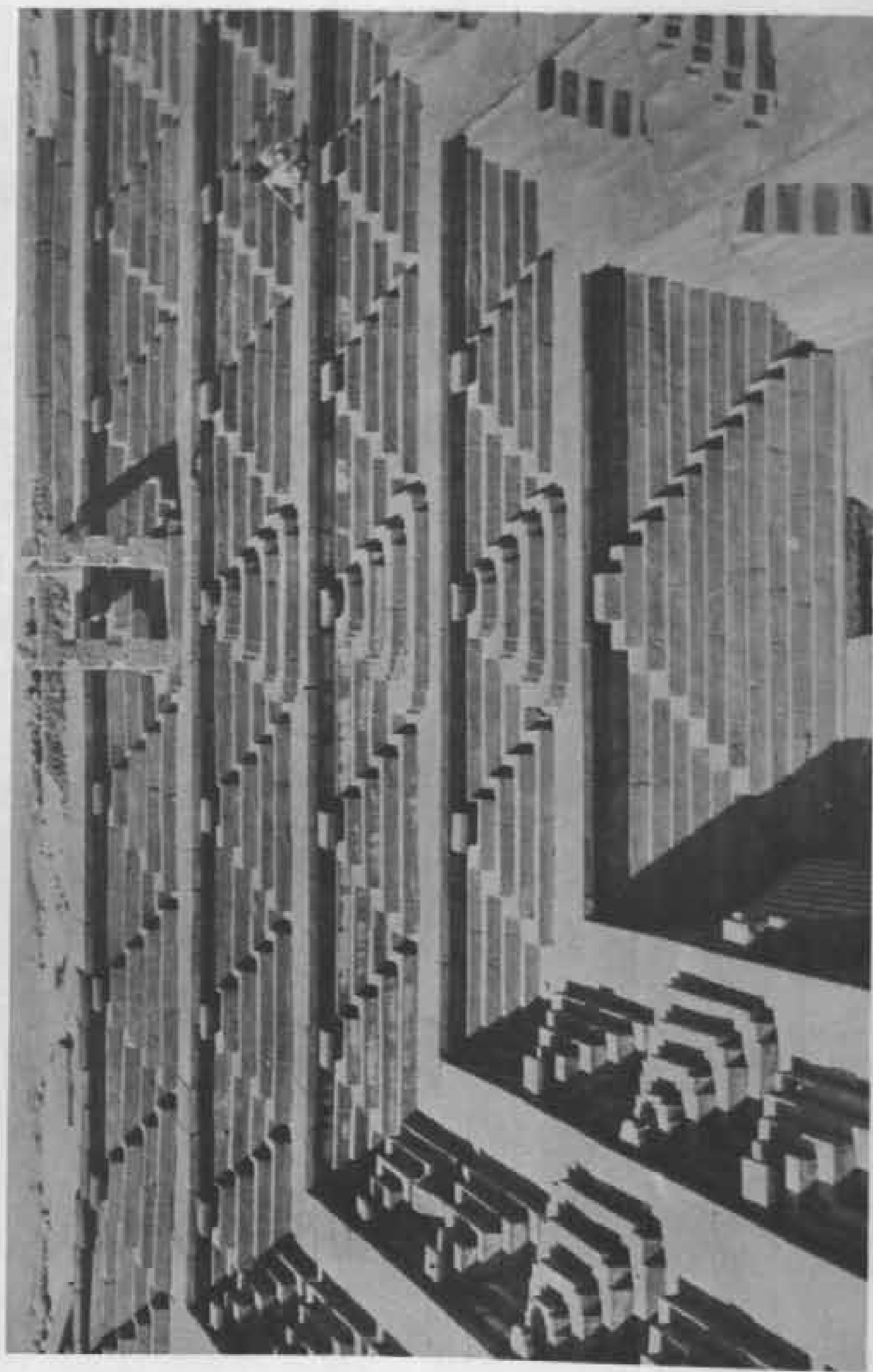
8 Maner: Terracotta and iron objects, Period II. *See page 12*



9. Goraj: Exposed Brick structures. *See page 19*



10. Panjasaran: Early Stone Age tools. *See page 22*



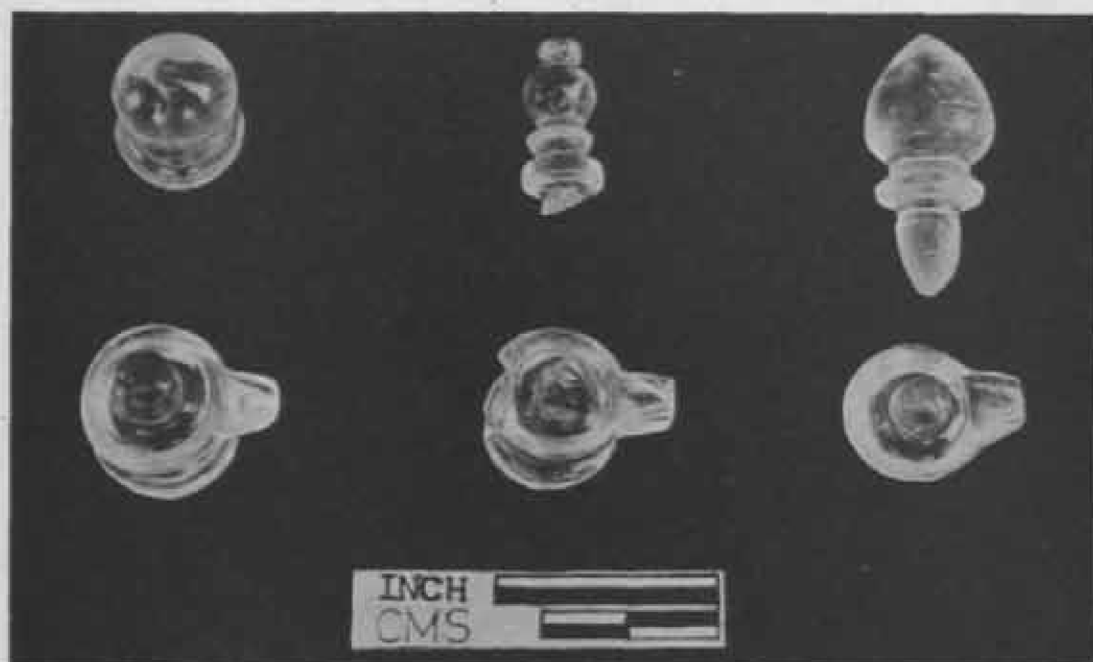
11. Hampi: Ornamental steps of tank. *See page 27*



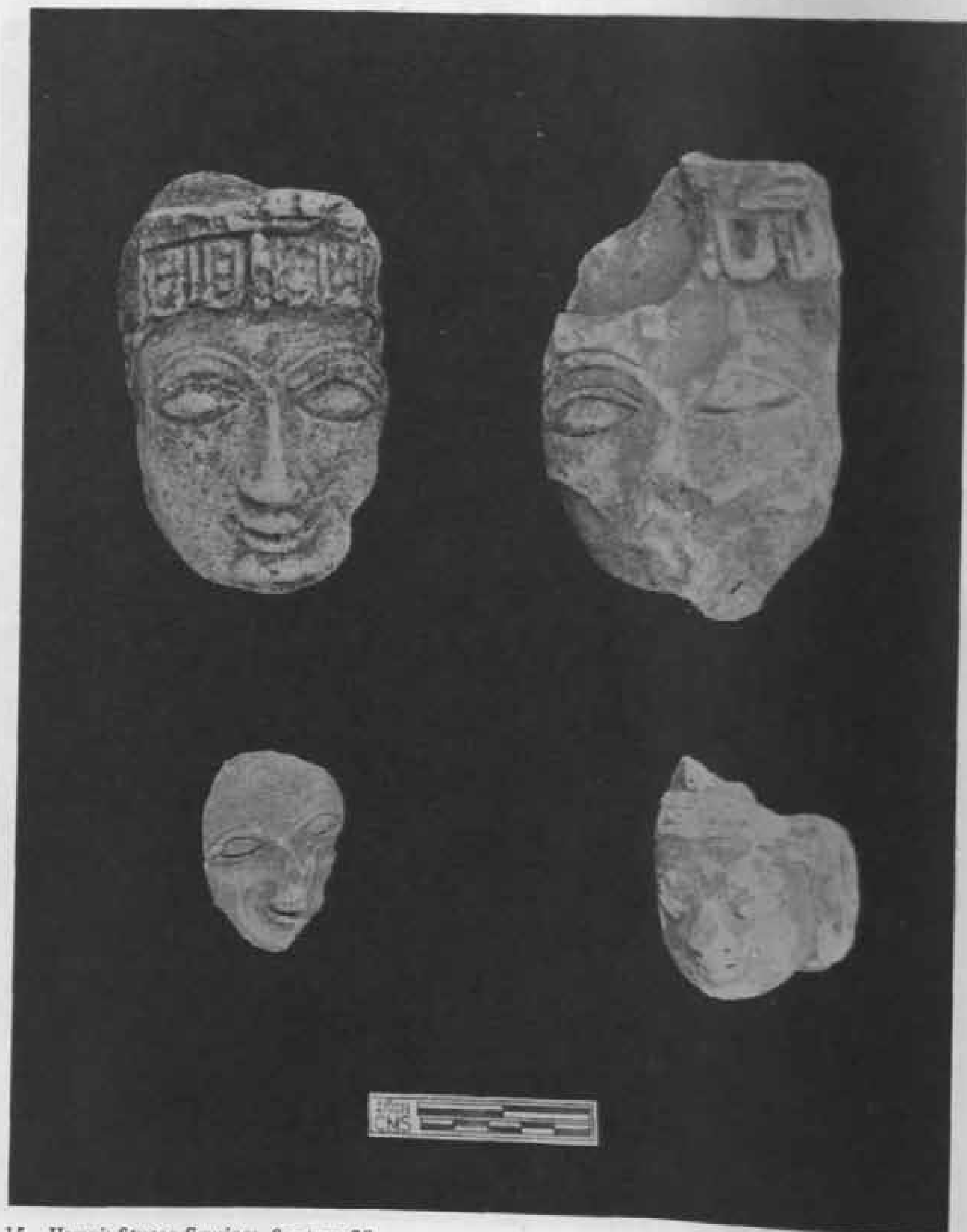
12. Hampi: Stone sculptures. *See page 28*



13. Hampi: Stone sculptures. *See page 28*



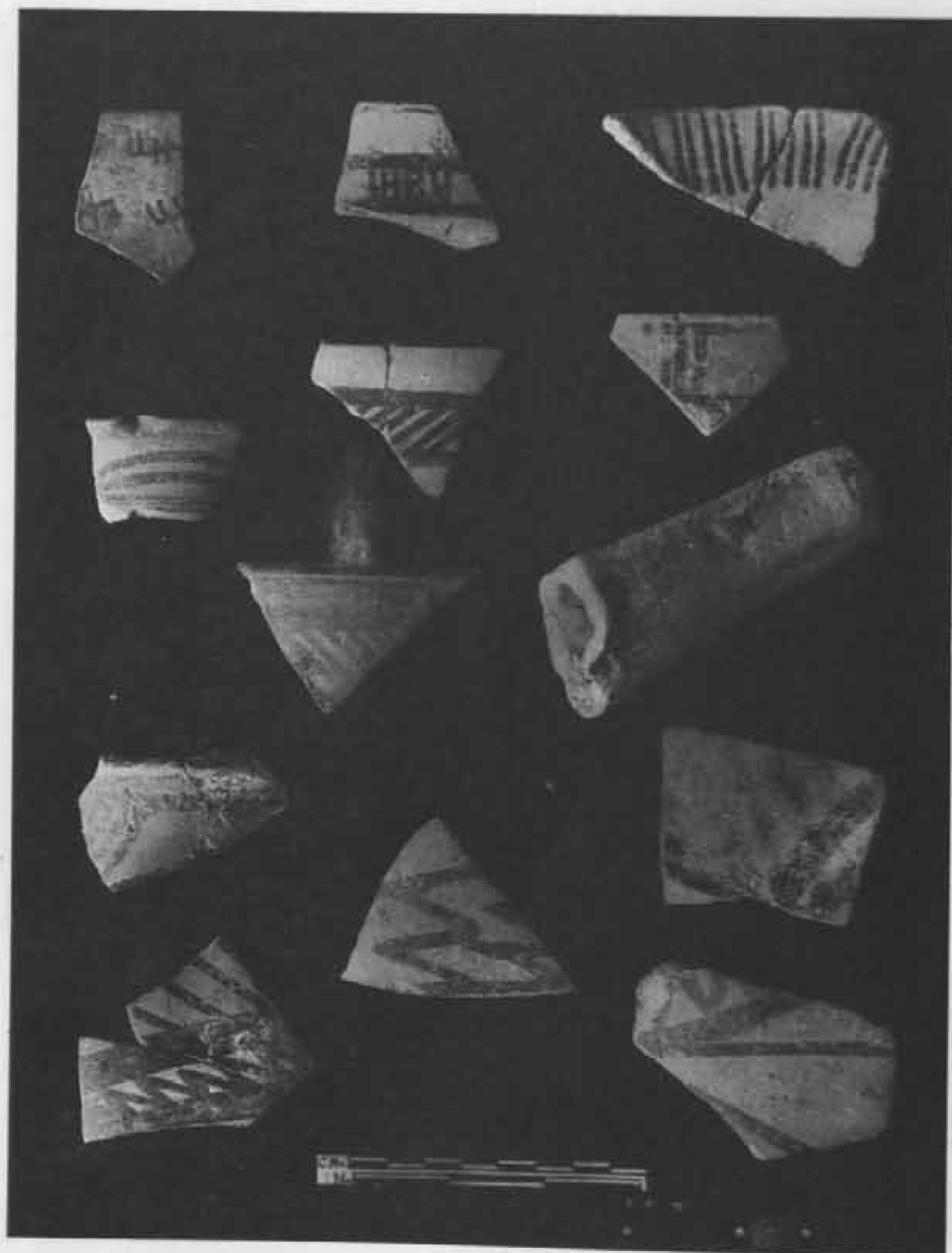
14. Hampi: Stone objects, *See page 28*



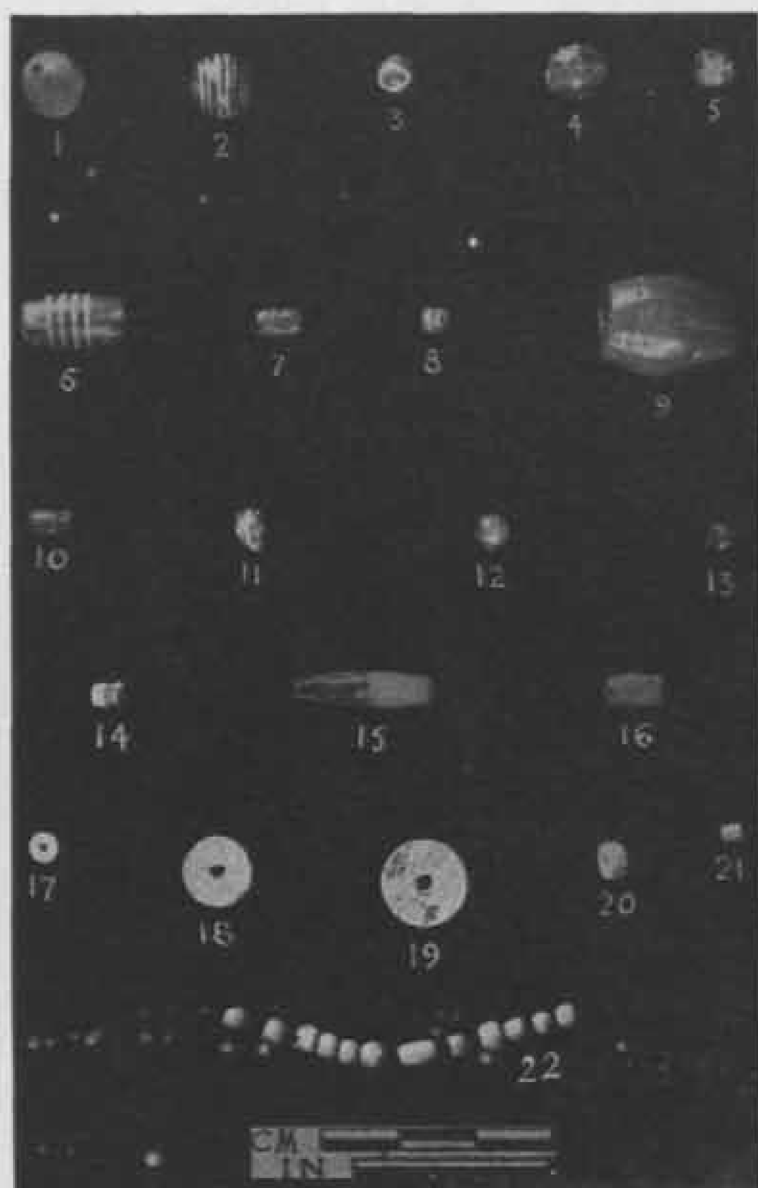
15. Hampi: Stucco figurines. *See page 28*



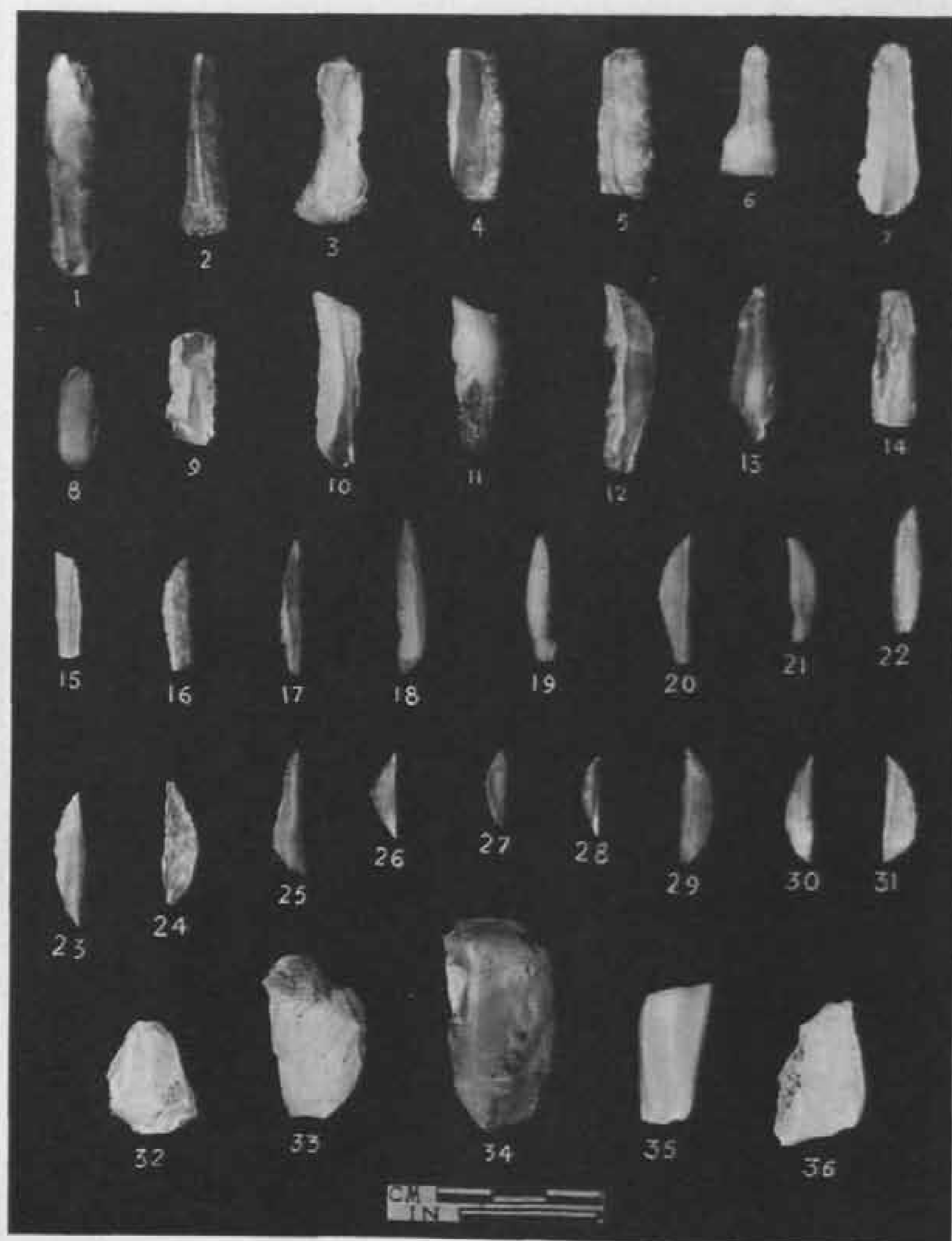
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17. Tuljapur Garhi: Painted sherds of Malwa and Jorwe wares. *See page 50*



18. Tuljapur Garhi: Semi-precious stone objects. *See page 50*



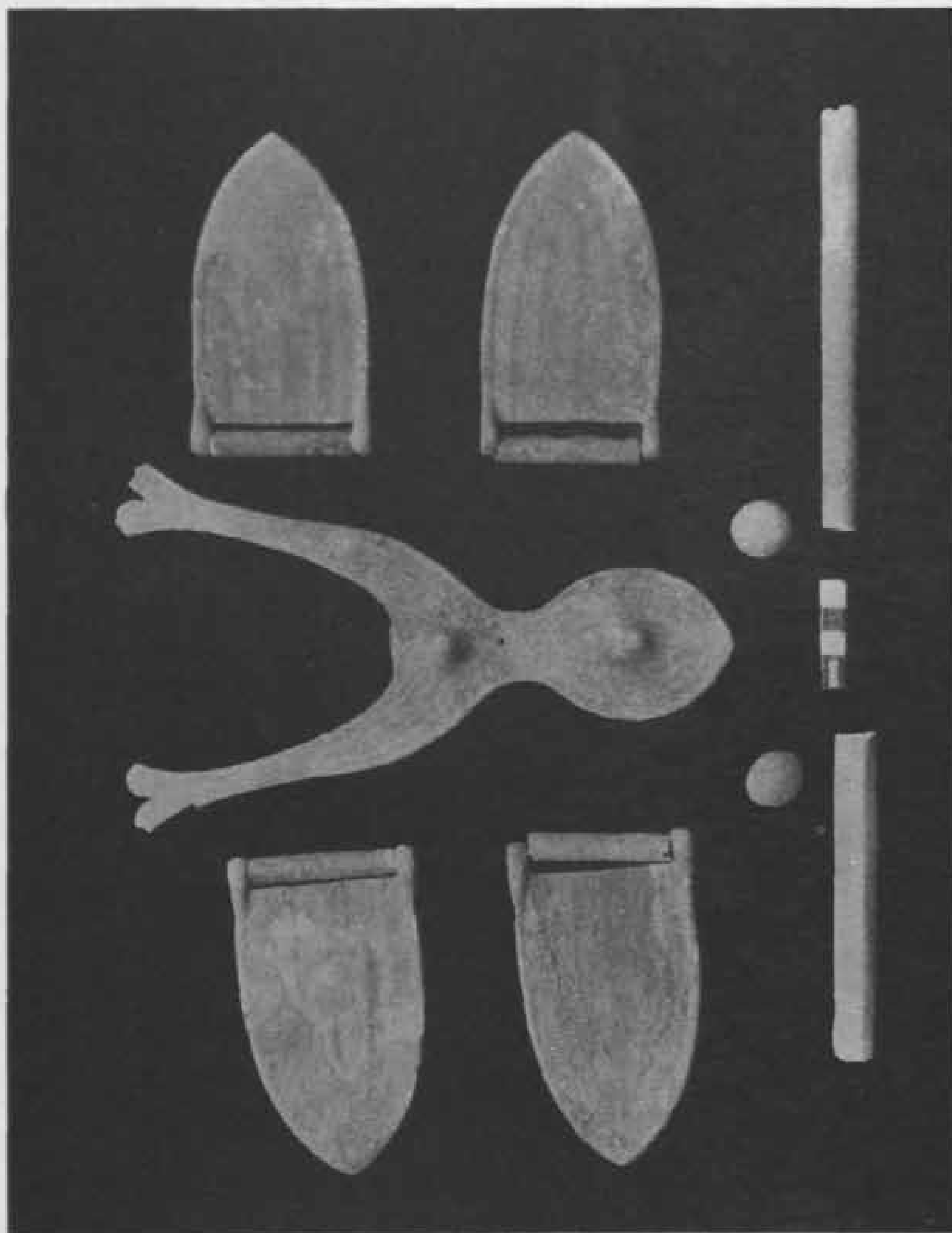
19. Tuljapur Garhi: Microliths, *See page 50*



20. Kaothe: Exposed burial. *See page 53*



21. Raipur: Megalith 2. *See page 54*



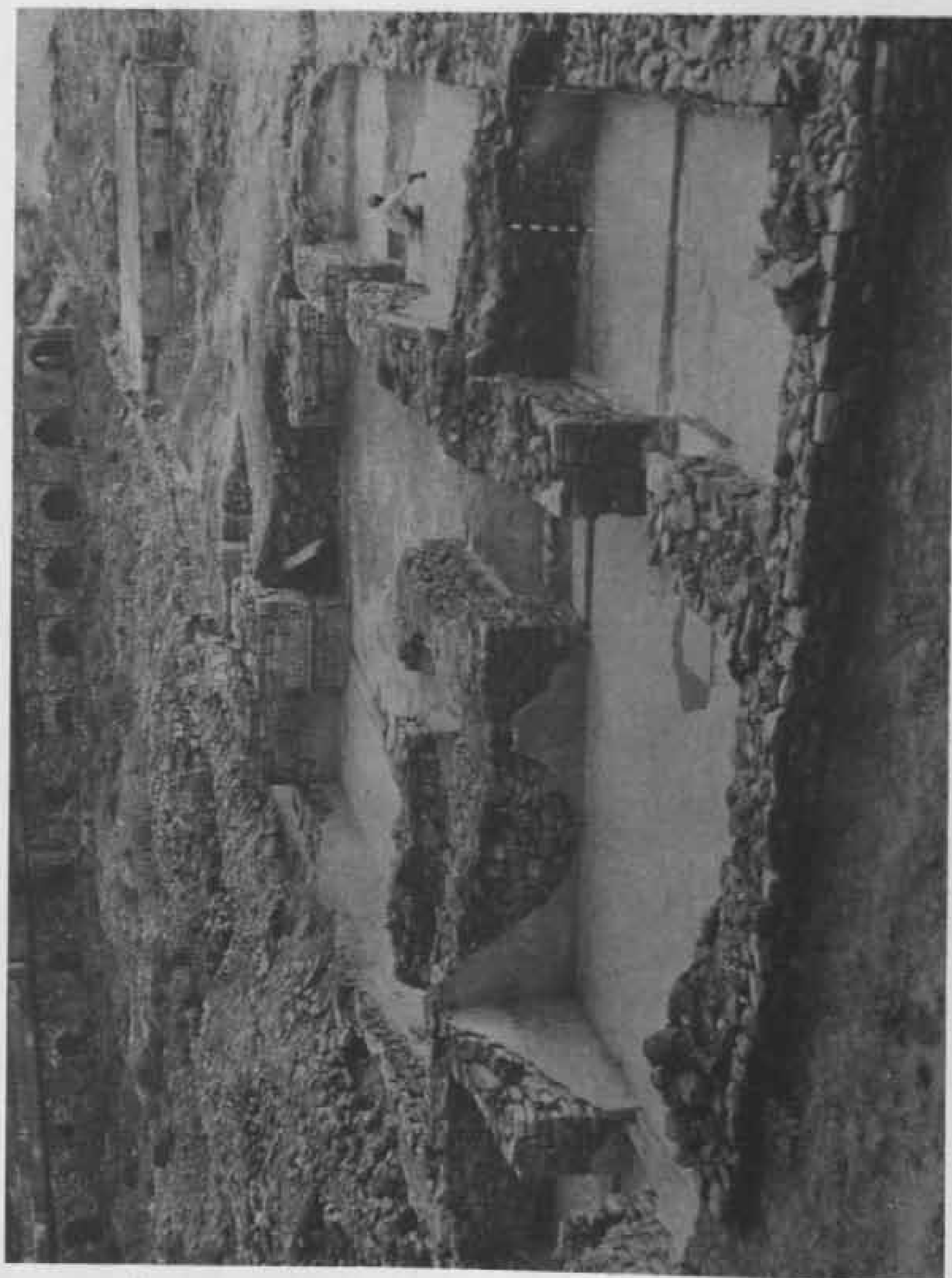
22. Raipur: Megalith 2, Copper objects. *See page 54*



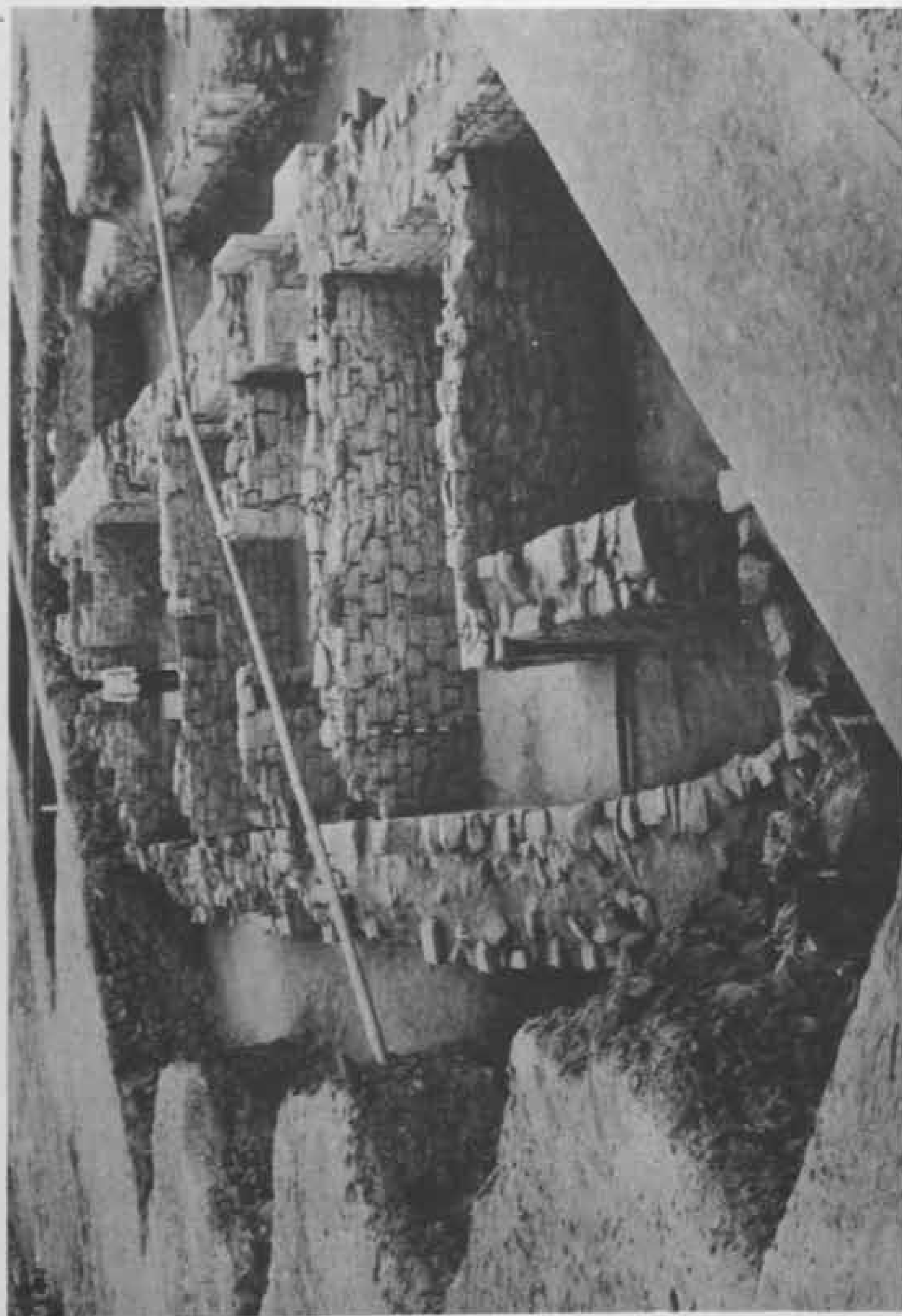
25. Shyamsundar Tila: Terracotta plaques. *See page 79*



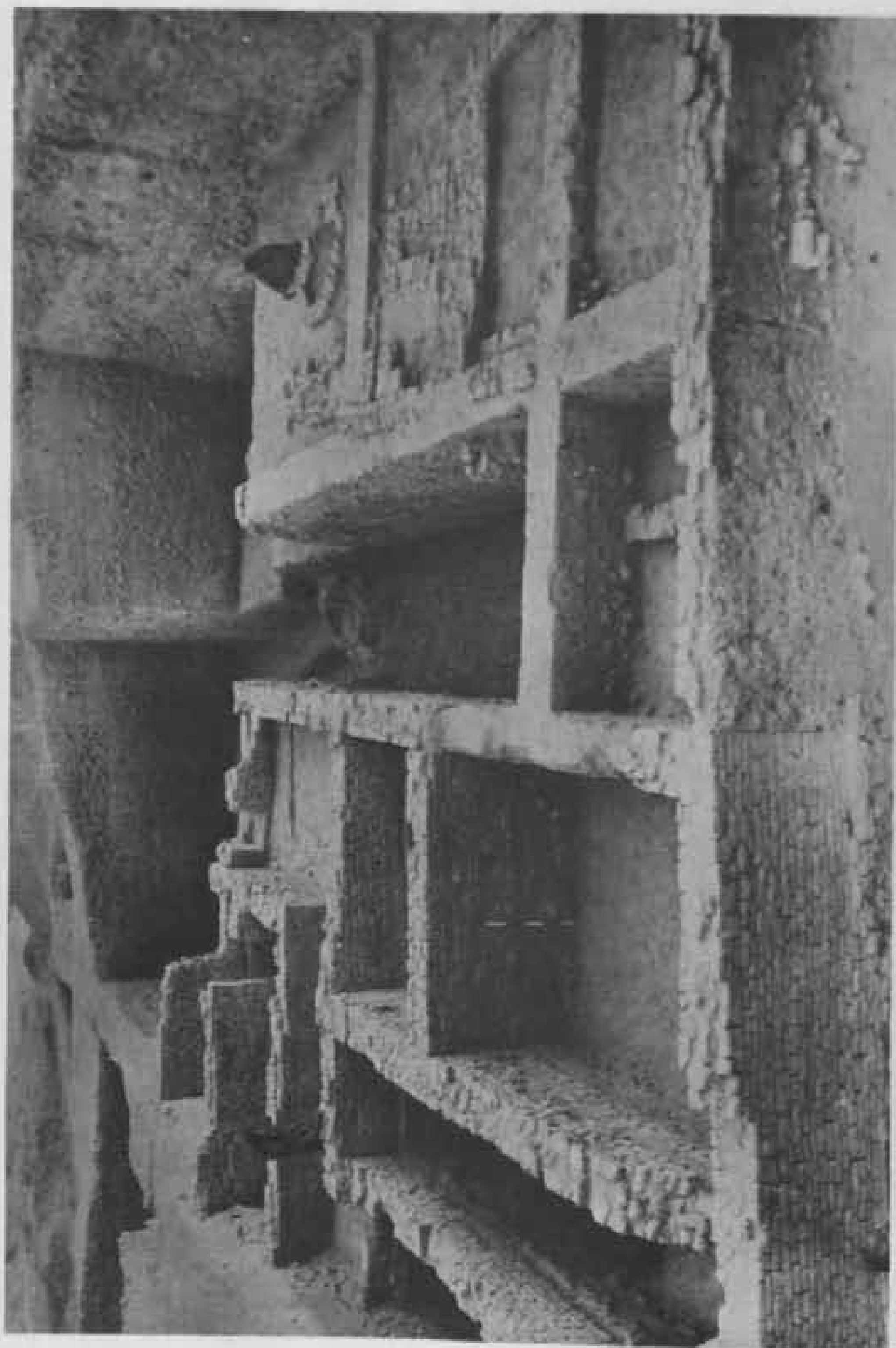
24. Thakurani Tila: Exposed structures, *See page 79*



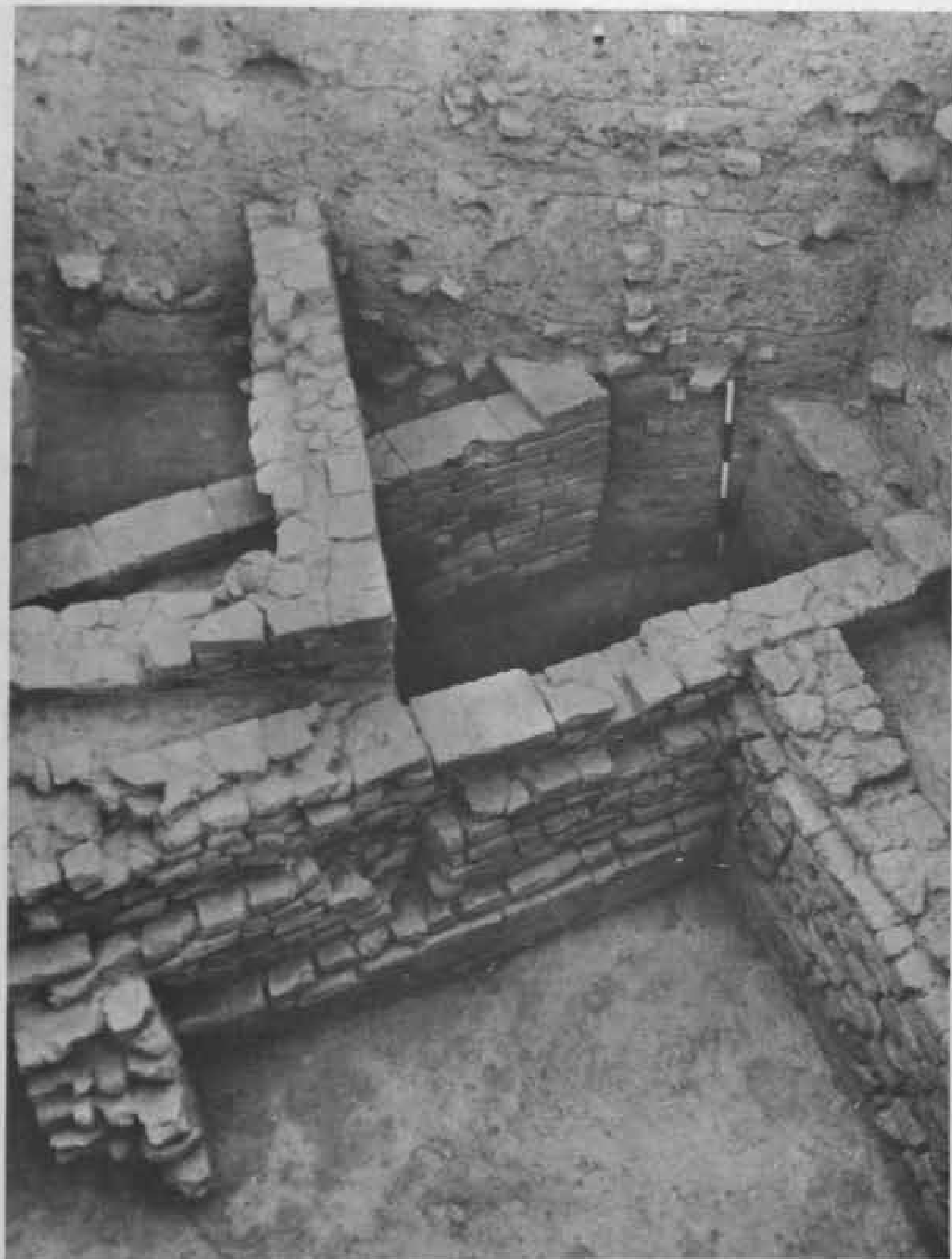
25 Fatehpur Sikri: Exposed structures adjacent to Samosa Mahal. *See page 83*



26. Fatehpur Sikri: Exposed structural remains near Jodha Bai palace. *See page 84*



27. Sringaverapura: Exposed remains of residential complex. *See page 85*



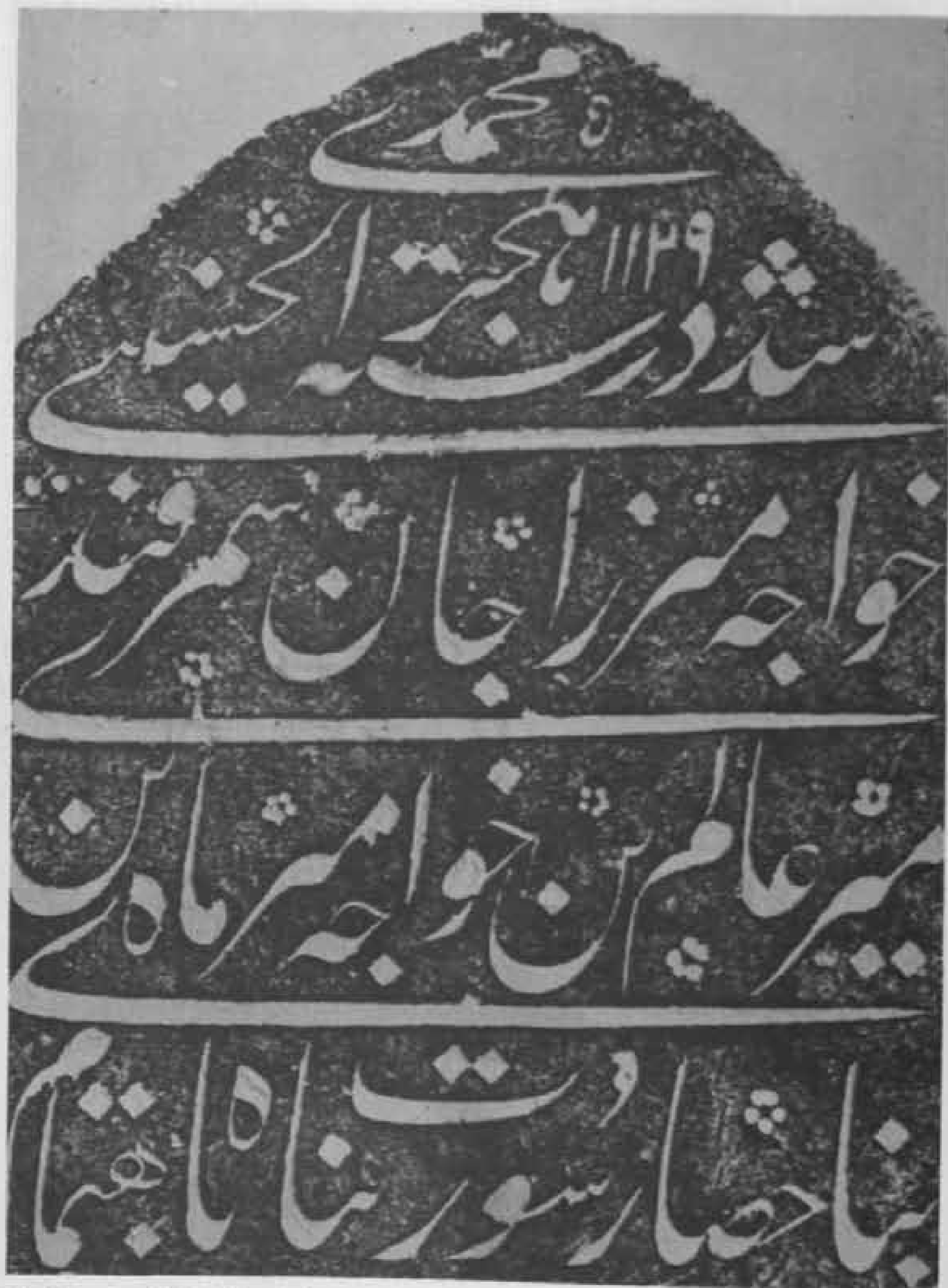
28. Sringaverapura: Tank B, exposed house complex. *See page 86*



29 Narhan: Sprinklers, Period IV. *See page 91*



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32 Udbal : Inscription of Aurangzeb. *See page 140*

EPIGRAPHY

SANSKRITIC AND DRAVIDIC INSCRIPTIONS'

ANDHRA PRADESH

1. Vijayanagara Inscription, Etimapuram, District Cuddapah.— This inscription, engraved in Telugu language and characters, is dated in Saka 1469, Parabhava (AD 1547) and belongs to the reign of Sadasivadeva-maharaya. It records the remission of taxes, on barbers and others, from Yitimarpuram *alias* hagrara (agrahara) Vobasamudram, as *sarvamanya* by Ramaraju and Guruvaraju Chinasamgayya Choda-maharaju at the instance of the King.

2. Vijayanagara Inscription, Mannur, District Cuddapah.— This inscription in Telugu language and characters is dated in Saka 1495, Srimukha (AD 1574) and belongs to the reign of Srirangaraya. It seems to record the conferment of the *magani* of Vutukuru village of Matli-Tirumalarajayya by a number of devotees at the instance of Virasaiva-Siddha-bhikshavritti-ayyavaru, a devotee of god Sri Mallikarjuna-Mahalimgadeva of Sriparvata (Srisailam).

3. Chola Inscription, Penagaluru, District Cuddapah.— Dated in the thirty-third regnal year of Kulottunga III (AD 1211), this Tamil inscription records the gift of one *madai* for maintaining a *sandhi* lamp for the deity Avimuktisvaram-udaiyar of Perungandur, by an individual named Pudoliya Boyundan, son of Ramandi.

4. Two Vijayanagara Inscriptions, Pondaluru, District Cuddapah.— Of the two Telugu inscriptions of Sadasivadevaraya, one, dated in the Saka year 1483 (AD 1562), records a gift of *magani* villages to god Tiruvemgalanatha of Potapinamtisima situated in Sidavata (Siddhavatta) by Ramarajayya to Bayakari Ramappayya and [Bu] lloju of Poladaluru after making the remission of taxes on barbers of their village. The second one, dated in the Saka year 1493 (AD 1571) records the grant of lands for the maintenance of lamp, food offerings and conducting the car festival to god Varadarajaperumal of Poladaluru by Tirumalaraju, for the merit of his parents. The donor is stated to have obtained the grant of the village as *nayankara* from Ramaraju Tirumalarajayyadeva-maharaju.

Information from: 1-4, 9-24, 29-37, 45-54, K. V. Ramesh and Madhav N. Katti, assisted By M. D. Sampath, C.R. Srinivasan, K.M. Bhadri, N.Nanjundaswamy, Venkatesha, P.Venkatesan, DJV1. Nagaraju, S. Nagajuna, S. Swaminathan and T.S. Ravishankar of the Epigraphy Branch of the Survey, Mysore; copied, examined and reported nearly two hundred inscriptions during the year (the important ones are noticed here) ; 5-8, Department of Archaeology, Gujarat ; 25-27, South-western Circle of the Survey ; 28, Shobhana Gokhale of Deccan College Post-graduate and Research Institute, Pune ; and 38-44, Western Circle of the Survey.

GUJARAT

5. Brahmi Inscription, Mandva, District Bhavnagar.— Engraved on a copper seal containing footprints, this inscription is in Sanskrit language and Brahmi characters of about the fourth century AD and states that these footprints are of Samaghosha, the son of Nadighosha.

6. Brahmi Inscription, Bhadarkantha, District Rajkot.— This inscription, engraved on a seal in Brahmi characters of about the fourth century AD, reads [Ku] marasya.

7. Brahmi Inscription, Jasapar, District Rajkot.— Dated in year 233 (?), this inscription is engraved on a sandstone slab and contains the name of Kumaradatta, the son of Kumaradeva (Pl. 30).

8. Votive Tablet Inscription, Than, District Surendranagar.— Containing four lines in Siddhamatrika characters of about the seventh-eighth century AD, this inscription records the Buddhist formula *Ye dharma hetu prabhava,* etc.

KARNATAKA

9. Kadamba Inscription, B. Shigigatti, District Dharwad.— This Kannada inscription belongs to the sixteenth regnal year (AD 1162) of Sivachitta Vira-Permmadideva of the Kadamba dynasty ruling from the capital Chandrapura. It records the grant of land to the god Sulapani by Jakka-gavunda. It also records another grant for the purpose of feeding the ascetics, repairs *(khandasphutita-jimnoddhara)* and for conducting the festivals (in the temple of) and for food offerings to the deity Siddhisvara of Hagade.

10. Vijayanagara Inscription, Dhumwad, District Dharwad.— This inscription in Kannada language and characters, belongs to the reign of Sadasivaraya and is dated Saka 1468, Plavanga (AD 1547). It records a gift as *sarvvamanya* to Navila Timmojaya, [Koda] vojaya and Bhadrojaya by Ramarajadeva, under the orders of the king.

11. Three Kalyana Chalukya Inscriptions, Mukkal, District Dharwad.— Of the three Kannada inscriptions belonging to the reign of Tribhuvanamalla, the first one, dated in the year Siddharthi (AD 1079), states that *mahamandalesvara* Guvaladeva III was governing Konkana-900 and Palasige-12,000,and *mahamandalesvara* Santivarma was governing Hanun-gal-500 and Kontakuli-30. It also records the grant of wet land for the food offerings to the deity Barmmesvaradeva and for the repairs in the temple by Barmma-gamanda.

The second one, dated Chalukya Vikrama year 7, Dundubhi (AD 1082), refers to the administration of Birayadeva, son of *Mahamandalesvara* Santivarmarasa over Honnasoge

which was held as *manneya-samya.* It further refers to the gift of gold to the deity Brahmes-varadeva and to the ascetics therein for the purpose of their clothings. The third one is dated in the year Subhanu (AD 1103) and refers to the rule of *Mahamandalesvara* Guvaladeva over Konkana-900 and Palasige-12,000 and that of Tailadeva over Hanungal-500 and Kontakuli-30. The epigraph also states that Barmma of Honnasoge constructed a temple of Siva and his son Mala-gavunda granted land to the deity Mulasthanadeva.

12. Two Jaina Inscriptions, Muttagi, District Dharwad.— These two inscriptions, engra-ved on the pedestals of images are in Kannada language and characters of the tenth century AD. The first one records the installation of the image of Parsvanatha in the *basadi* Simha-jinalaya at Muttagi by Tariya Ballana and Kochara Dombana who were the disciples of Ravi-chandradeva, disciple of Ekavira-panditadeva of Yapaniya-samgha, Karaya-gana and Mayilap-anvaya. It further refers to Unakal-Uttamadevar as Ekkoti-chakravartti.the builder of *a jinalaya* at Ikkesvara. The second inscription states that Kochara Domba, disciple of Ravichandradeva caused the construction of a *basodi* and consecrated the image of Neminatha in that temple.

13. Rashtrakuta Inscription, Ron, District Dhanwad.— This fragmentary inscription engraved in Kannada language and characters and dated Saka 85 (in all probability Saka 853 or 854, corresponding to AD 931 — 932 , belongs to the reign of Govinda IV. The importance of the inscription lies in the fact that it belongs to the early phase of the reign of the Rashtra kuta emperor.

14. Three Kadamba Inscriptions, Sangamesvara, District Dharwad — Of the three Kannada inscriptions, two belong to the reign of Jayakesideva I and are dated in Saka 991, Kilaka (AD 1068). The first one registers the grant of wet land, to provide for the food offer-ings and worship to Siva temple constructed by Santa-gamunda, a disciple of *Ekkotiya-tortu* Goniyadeva, by Chatta-gamunda. It also records the grant of wet land to god Mulasthanadeva for a similar purpose. The second one records the gift of land for worship and offerings, evid ently, of the same deity by Santagavunda, son of Dasihalla-gavunda. Chatta-gavunda is men tioned as the *samaksha* of the king. Dated in Saka 1004, Dundubhi (AD 1082), the third inscription refers to the rule of Guvaladeva III over Palasige-12,000 and Konkana-900 from the capital Anilapura. It also registers a gift of money for the purpose of a perpetual lamp in the same temple, constructed" by Santa-gamunda, by *Ekkotiya tortu* Naganna, son of Narasimga-gamanda.

15. Kadamba Inscription, Sulikatti, District Dhanwad.— This Kannada inscription is dated in the twenty-second regnal year (AD 1169) of Sivachitta-Vira-Permmadideva and re cords the grant of four *mattars* of land for worship and offerings to the deity Gramesvara at Haruvantigere on the occasion of solar eclipse, by Bamma-gavunda who has been extolled at length. It further records some grants by officials, merchants and *nada-mummuridandas* to the same deity.

16. Inscription, Bommanahalli, District Mysore— Belonging to the reign of Devaraju Vodeyar, son of Devaraju-Vodeyar, this Kannada record, dated in Saka 1598, Nala (AD 1676), registers the gift of the village Bommanahalli in Vamkanada-stala, along with the income from its wet land, garden, weaving house, etc, for offerings to god Srideva of Haradanahalli.

17. Hoysala Inscription, Kodiugane, District Mysore.— The record in Kannada script and language, belongs to the reign of Hoysala Vira-Ballaladeva III and is dated Saka 12[3]0, Kilaka (AD 1309) and states that Ki[ra] ta-gavuda of Garudupade-nadu caused the constru ction of the temple of god Mallinathadeva and made grant of paddy from the lands *(sthanamanya)* probably for the worship of the deity.

18. Inscription of the Kadambas of Hangal, Byagadde, District North Kanara.— This inscription is in Kannada language and characters of the eleventh century AD and belongs to the reign of [Tai] ladeva. It records the death of *mandalika* Bammavijaya in the course of an attack. Bammavijaya is referred to as the brother-in-law *(mayuduna)* of Bamme-nayaka, son of Amna-nayaka. It also mentions Save-nayaka of Sirinele and his wife Chandaladevi.

19. Kalyana Chalukya Inscription, Gonur, District North Kanara.— Engraved in characters of the eleventh century and dated in the Chalukya Vikrama year 8,Isvara (AD 1084), this fragmentary Kannada record belongs to the reign of Tribhuvanamalla(Vikramaditya VI). It seems to record the gift of land to a deity (name not clear) by a *mahamandalika* (name lost) of Gonaura. It also mentions *nal-prabhu* Hacha-gammanda.

20. Inscription of the Kadambas of Hangal, Gonur, District North Kanara.— Dated in Saka 1104, Plava (AD 1181), this Kannada inscription belongs to the reign of Kirtideva. It states that the (king), was governing the provinces of Banavasi-2,000and Hanungal-500. It also records the death of Kama-bhupa in the fight with Kalleya Ballala in the course of the siege of the village.

21. Rashtrakuta Inscription, Kalkardi, District North Kanara.— The inscription is in Kannada language and characters of ninth century AD and belongs to the reign of Rash trakuta Jagattunga. It also mentions a ruler (name lost) of Banavasi-mandala and records the death of a hero in a battle.

MADHYA PRADESH

22. Image Inscription, Bijawar, District Chhattarpur.— Engraved on the pedestal of a broken Jaina image lying in a field behind the Kisangadh road, the inscription, dated in Samvat 1140, is in Sanskrit language and Nagari characters. The record mentions Jagadhara and Mahidhara, the two sons of *sreshthi* Jayapala of (. .) dhapura. Obviously, these two persons caused this image of Rishabhanatha to be made.

23. Bundella Inscription, Joran, District Chhattarpur.— This inscription, engraved in an old well is in local dialect and Nagari characters. It is dated in Samvat 1759 (AD 1701) and belongs to the reign of the Bundella king *Maharajadhiraja-Sriraja-maharaja* Chattrasala. The epigraph records the construction of the well *(vihari)* by *maharani* Sumdari, the wife of the ruler.

24. Memorial Stone Inscription, Salaiya, District Chhattarpur.— This inscription, in local dialect and Nagari characters, belongs to the reign of *Maharajadhiraja-su(ra)tana-patasahi* Mahamudaraja. Dated in Samvat 1407 (AD 1350-51) it mentions *mahamanddika* Silasasane Jayasimmadeva. It further records the performance of *sati* by the daughter of *Ha* Bhonima, a resident of Salaiya. It also mentions Samva and Raghinadeva, who seem to be the husband and son respectively of the deceased lady.

MAHARASHTRA

25. Nagari Inscription, Chaklamba, District Bhir.— A damaged inscription found engra ved on a temple is in Nagari characters of about the sixteenth century AD.

26. Nagari Inscription, Dharmapuri, District Bhir.— This inscription noticed on a stone slab on the west inner fortification wall is in Nagari characters of about the fifteenth century AD, and it consists of twenty lines each having eight to twelve letters.

27. Kannada Inscription, Dharmapuri, District Bhir.— Engraved on a stone slab on the north inner fortification wall, the inscription is in Kannada language and characters of about the twelfth century AD and it consists of sixteen lines each having eighteen to twenty-two letters recording some grants made to a Jaina *basadi.*

28. Brahmi Inscription, Visapur, District Pune.- Of the six Brahmi inscriptions of the Satavahana King Vasisthiputra Pulumavi, one, dated in the twenty-fifth regnal year of Vasisthi-thiputra records the gift of water cisterns made by Kosikiputra Vinhundata,who was the *Mahamthi* of Pulumavi. Another record also mentions the gift of a *podhi* by the writer Mugu-dapalita.

PONDICHERRY

29. Chola Inscriptions, Bahur, Pondicherry.- Of the two Tamil inscriptions engraved on the wall of *ardhamandapa* in front of the central shrine of the Mulasthanesvara temple, the first one, dated in the year opposite the fifth regnal year (AD 961-62) *of Pandiyan-talaikonda* Kop-Parakesari, records the gift of thirty *kalanju* of gold by Perungonrainambi and Nambi-Madhavan of the village to provide for the *abhishekha* (bathing) of the deity Mulasthanam-udaiyar of Vagur. The members of the *Punniyaganam* were required to see the proper main-

tenancc of the bathing of the deity. The second record, dated in the sixth regnal year (AD 1018) of Rajendra I, refers to the renewal of the grant of gold made by two persons as referred above, by the members of the *alumganam* of Bahur *alias* Alagiyasolach-chaturvedimanga-lam on the north of Vesalippadi in Jayangondasola-mandalam.

30. Rashtrakuta Inscriptions, Bahur, Pondicherry.— Of the two Tamil inscriptions en graved on the wall of the *ardhamandapa* of the Mulasthanesvara temple, the first one, dated in the nineteenth regnal year (AD 958-59) of the king Kannaradeva (Krishna III), records a gift of 90 sheep by Iraippunaichcheriyudaiyan Vattuladi Nanurruvan *alias* Mummudisolap-Pallavaraiyan for maintaining a perpetual lamp to the deity Sri Mulasthanattu-Mahadevar of Vagur. The second inscription, dated in the twenty-fourth regnal year (AD 963-64) of the same king, refers to the construction of two pillars, two pilasters and *uttiram* (beam) in the *mandapa* in front of the *tirunnaligai* (central shrine) of the temple of Sri Mulasthanattu-Maha-devar of Vagur by Karaiudayan Kaliyan Manradiy-Aiyan *alias* Rajadittapperaraiyan.

RAJASTHAN

31. Stone Inscription, Chinch, District Banswara.— This inscription, in Sanskrit language and Nagari characters and engraved on the pedestal of an image of Brahma is dated in Samvat 1583 (AD 1526). It belongs to the reign of *Raula* Jagamaji and records the grant of the village Chhichhi to *Bhatta* Narasaha by *Bai* Lasaji.

32. Stone Inscription, Talwara, District Banswara.- Dated in Samvat 1615 (AD 1558) and belonging to the reign of *maharaja* Gadadhara, this inscription found engraved on the ex terior wall of a dilapidated temple is in local dialect and Nagari characters and records the completion of the pilgrimage undertaken by Bha [na] ramgani.

33. Stone Inscription, Umrai, District Banswara.— Engraved on a stone slab fixed in to the *mandapa* of Sri Tripurasundari temple and dated in Samvat 1540 (AD 1483), the inscription is in corrupt Sanskrit and local dialect and in Nagari characters. It records the performance of *Sahagamana* by *Bai* Nagalade and the construction of a temple of goddess Tripurayi-Adirupa (Tripurasundari).

34. Image Inscription, Jalore, District Jalore.—Engraved in Sanskrit language and Nagari script and dated Samvat 1288 (AD 1232) the inscription records that the two Jaina images *(Jinayugalam)* were caused to be made at the *Chaitya* of Madadi-grama by *Mantri* Sri Yasovira, son of Yasobhadra-suri of Shanderaka-gachcha, for the merit of his mother Udayasri. It further states that the images were installed by Samti-suri.

35. Pillar Inscription, Padardi, District Jalore.— This record in Sanskrit language and Nagari characters of the fourteenth century AD belongs to the reign of *Rajasri* Haripaladeva

[of the family of the Chahamana of Satyapura]. It records the excavation of a tank, for the merit of *Rajasri* Bhaskara, son of *Bai-Sri* Ramadevi, for the use of all beings to quench their thirst. It also refers to Parasiharachada-grama.

36. Stone Inscription, Sanchore, District Jalore.— This inscription in Sanskrit language and Nagari script, bears two dates [Sam] 1234 (AD 1178) and 1237 (AD 1181). It refers to *pamchakula* at Satyapura (the find spot of the inscription) and records on the first date a gift of two *rupakas* by Kumarasiha. On the second it registers a gift of *dra*° 3 by Dharada, probably to meet the monthly expenses during *Amardaki-parvva.*

37. Pillar Inscription, Sanchore, District Jalore.— This inscription, in local dialect and Nagari characters, is dated in Samvat 1710 (AD 1653-54) and refers to Samata-siha of the Chahamana family, his wife, Satoshade, *Yuvaraja-kuara* Sri-Venidasa and others. It further records the installation of the deity Muttasvara (Muktesvara?) at Satyapura.

38. Stone Inscription, Balra, District Pali.- Dated in Vikrama 1723 (AD 1666), this inscription is in Nagari characters and records the performance of *sati* by a lady.

39. Inscription, Basia, District Pali.— An inscription containing five lines in Nagari characters is dated in Vikrama 1763 (AD 1706) and records the demise of an individual.

40. Inscription, Deoria, District Pali.- An inscription containing four lines in Nagari characters is dated in Vikrama 1727 (AD 1670) and records the performance of *sati* by a lady.

41. Inscriptions, Giri, District Pali.- Of the two inscriptions, one is dated in Vikrama 1509 (AD 1442) and records the demise of an individual belonging to a Jetawata Rajput family and the other dated in Vikrama 1678 (AD 1621) records the death of Giri Nandabandha.

42. Inscription, Khushalpura, District Pali.- Dated in Vikrama 1705 (AD 1648), the inscription in Nagari characters records the demise of Piradansi.

43. Inscription, Sumel, District Pali.- An inscription containing ten lines in Nagari characters is dated in Vikrama 1740 (AD 1683) and records some donation to a temple.

44. Inscription, Viratiyakhurd, District Pali.- Dated in Vikrama 1652 (AD 1595), the record contains six lines in Nagari characters and refers to the demise of an individual.

TAMIL NADU

45. Stone Inscriptions, Vellalur, District Coimbatore.- Of the two Tamil inscriptions from a Siva temple, in characters of ninth century AD the first one, in Vatteluttu script,

is dated in the eighth opposite to the fourth regnal year (8 +4) of the Chera king Kokkandan Viranarayana and records the gift of ten *kalanju* of gold by Nakkan Marudan which was entrusted to the *urar* of Velilur for maintaining a perpetual lamp to the deity Tennur Nakkanar of Velilur. It further refers to the discontinuance of services in the temple for certain days in the year and records the gift of twenty *kalanju* of gold received from the *urar* by *Uran* Murugan, the brother-in-law *(maittunan)* of the donor to restore the celebration of the nine-, day festival and the maintenance of a perpetual lamp in the temple. The second one, belonging to the same year of this king also records the gift of twelve-and-a-half *kalanju* of *sempon* weighed by the measure utilized for the *palankasu,* for a perpetual lamp to be maintained in the day time to the deity Tennurp-perumanadigal of Velilur by Sendan (Pogo)tti Sattiarai - yan of [Mudisulanda]... pura in Velpul-nadu. The *sabhaiyar* were required to see the maintenance of the lamp from out of its interest *(poli).*

46. Hero-stone Inscriptions, Dharmapuri, District Dharampuri.— Of the three hero-stone inscriptions, the first two are in Tamil and the third in Kannada characters and these are now preserved in the State Archaeological Museum, Dharmapuri. The Tamil inscriptions are engraved in Vattelluttu characters of the sixth century AD. The first was originally found in Kolagattur in the same district. It is dated in the twenty-second regnal year of Mandaparumar and records the death of Varakaru Irumburai Sattan of [Si]ri[ya] ri-nadu in a cattle raid. The second record originally found in Panaikulam, also in the same district, is dated in the twelfth regnal year of Ko- Vijayaiyapurumar. It refers to the death of a hero (name lost). The third fragmentary record is in Kannada characters of the tenth century AD. It was originally found in Kolagattur in the same District. The inscription records the grant of three *mattars* of land to the god (name lost) and also mentions the names of Birayya, Pemambi and others.

47. Pallava Inscription, Mukkanahalli, District Dharmapuri.— Written in Vatteluttu characters of the sixth century AD, this Tamil inscription, engraved on a hero-stone, is dated in the fourth regnal year of Mayendiraparumar and records the death of a servant of Singaperumadiaraisar in the fight that ensued between Perumbana-adiaraisar and Singaperum-adiaraisar.

48. Pandya Inscription, Melvalaivu, District Madurai.— Engraved on a rocky outcrop, this Tamil inscription in characters of the thirteenth century is dated in the year opposite to the twentieth year (20 + 1) of Sundarapandya (AD 1236-37) who assumed the title *Sonadu-kondaruliya* and records the construction of a stone channel over the rock and a sluice *(kalingu)* without endangering the embankment of the lake of Parambu *alias* Tirunarayanam-angalam, a *tiruvidaiyattam* village of the deity Alagar (Kallalagar temple) for the irrigation of the wet lands, by Kovurudaiyan Alvan Sakkarakkaiyan.

49. Chola Inscription, Pogalur, District North Arcot.— Dated in the [tenth] regnal year (AD 965-66) of the king Parthivendravarman, this hero-stone inscription is in Tamil language and characters and records the death of a hero, Senkavidi [se] gaiyagamundar, a native of [Pagarur], in the course of an attack on the village Vilattur.

50. Chola Inscription, Pakkam, District South Arcot.— The Tamil inscription, engraved on a slab built into the door-jamb of the Pidari temple, is dated in the forty-third regnal year (AD 1112-13) of Kulottunga I. The epigraph refers to the gift of two *sandhi* lamps by Naya-gappar of Parinchanpakkam and one *sandhi* lamp each by his wife Sani Nangaissani and his mother Andanssani to the deity Tiruppangenimuttam-udaiya-mahadeva. The *sivabrahmanas* of the temple received the money as gift.

51. Inscriptions, Sorattur, District South Arcot.— Engraved on a natural rock in a field to the east of the village, of the two inscriptions the first one, in Tamil language and charac-ters, is dated in the cyclic year Tarana and the month Adi and mentions the gift of a land (details.lost) probably by a native of Surattur, for the merit of Kondamanayaka. The other inscription, also in Tamil language and characters, is dated in the cyclic year Tarana and the month Adi and mentions the gift of a land (details lost) probably by a native of Surattur, for the merit of Kondamanayaka. The other inscription, also in Tamil language and characters, is dated in the cyclic year Saruvari and month A[di] and records the gift of land as *(manya)* in Surattur probably by Timma-nayaka, for the merit of Vittappa-nayaka.

52. Muttaraiyar Inscription, Darasuram, District Thanjavur.-Dated in the twentieth re gnal year of Ko-llango Muttaraiyar, a chief of Muttaraiyar family, this Tamil inscription, engra ved on the two faces of a pillar, is in the characters of the ninth century AD. The epigraph states that a *perungurip-perumakkal* (village assembly) of the Irasasingamangalam, on the southern bank of Sola-nadu gave one-and-a-quarter *sey* of land as *iraiyili* to the *urudaip-perumanadigal-mahavishnukkal* of the Naduvil-Srikoyil, after receiving sixty *kalanju* of gold from the latter. The land thus given was exempted from *panchavaram, echchoru* and other taxes.

53. Pandya Inscription, Melnilitanallur, District Tirunelveli.- This fragmentary Tamil inscription, engraved in Vatteluttu characters of the tenth century AD on the *adhishthana* of the Krishnasvami temple is dated in the fourth year opposite to the sixth regnal year (4+6) of *Solantalaikonda* Ko-Virapandya (AD 955-56) and refers to the *mahasabhai* of Nilinallur, a *brahmadeya* in Nechchura-nadu.

54. Stone Inscription, Muvariruntali, District Tirunelveli.- This inscription, engraved on a stone lying near the Siva temple and dated in the twenty-eighth regnal year of Tribhuva-*nachakrwatti-Konerimelkondan,* is in Tamil language and characters of the thirteenth century AD. The inscription records the grant of *nattam* lands belonging to the temple, along with the

income from several taxes as *devadana-iraiyili* to the *srimahesvaras* of the temple of Mala-udaiyar Irumanitan-Isvaram-udaiyar of Periyatali in Nerchchura-nadu. It further states that it is a copy *(tulyam)* of the order *(olai)* of the king conferring the privilege on them to make settlements in their lands designated as *Kaliyugaraman-tirumadaivilagam,* named after the king. This order was drafted and engraved by Vedinayakan and Venadudaiyan respectively.

ARABIC AND PERSIAN INSCRIPTIONS[1]

DELHI

1. Mosque Inscription, Delhi.— The epigraph records the construction of a mosque by Badru'd-Din [4]Ali Khan in AH 1287 (AD 1870-71) and states that the endowed property comprising of landed property and agricultural field be bequeathed its half-portion to his descendants and the remaining half-portion to be utilized for the needy persons. It enjoins that the governor *(Hakim)* should see that the Muslims should not create trouble on this distribution. The chronogram was composed by Naqsh.

GUJARAT

2. Epigraph, Kamrej, District Surat.— The epigraph, executed in *Naskh* with elongated shafts, records the construction of a new edifice (i.e. a mosque on which it appears), in AH 807 (AD 1405).

3. Inscription of the Minor Chiefs, Sachin, District Surat.— An epitaph written by Maikash, records that Yaqut Khan (the Nawwab of Sachin) died in AH 1269 (AD 1852-53).

4. Inscription of the Mughals, Surat, District Surat.— The epigraph, executed in beautiful *Nasta'liq* and dated in the 5th regnal year of Farrukh Siyar, AH 1129 (AD 1716-17), records the construction of the city-wall (Hisar) designated as Surat-Panah under the supervision of Mir 'Alam, son of Khawaja Mir Mah, son of Khawaja Mirza Jan al-Husaini of Samarqand (P1.31).

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[1] Information from: N. M. Ganam, assisted by M. F. Khan, S. S. Hussain, M. Y. Quddusi and M. I. Quddusi of the Epigraphy Branch of the Survey, Nagpur. Two hundred and eighty inscriptions were found, copied, examined and reported during the year under review out of which important ones are noticed here.

5. Epigraph, Surat, District Surat.— A badly damaged epigraph refers to the constru ction of a burj (tower) in AH 1030 (AD 1620-21).

6. Epigraphs, Surat, District Surat.— An epigraph engraved on wooden planks records the death of Hafiz Bahadur Sahib in AH 1152 (AD 1739-40). The deceased is mentioned as a crown of learned men. Another epitaph from the same place, records the demise of one Sultan Ahmad in AH 1171 (AD 1757-58).

7. Epitaphs, Surat, District Surat.— These three epigraphs record the deaths of celebrated saint Sayyid Sharif Alawi, son of Shaikh Ba-'Abud, Ahmad Zain and Sayyid Abdullah, son of Husain Hadad in AH 1172 (AD 1759), AH 1180 (AD 1766-67) and AH 1212 (AD 1798) respectively.

KARNATAKA

8. Inscriptions of the Asaf Jahis, Bidar, District Bidar.— A number of inscribed guns at Bidar, cast in the time of Nawwab Mir Nizam Ali Khan Bahadur are dated in AH 1192 (AD 1778-79), AH 1193 (AD 1779-80), AH 1196 (AD 1781-82) and AH 1198 (AD 1783-84).

9. Epitaph, Bidar, District Bidar.— A published inscription from Bidar *(Epigraphia Indo-Moslemica,* 1931-32, pp. 27-28, Pl. XVIII) was found on re-examination to contain the date of the construction of a courtyard as AH 1064 (AD 1653-54) and not AH 1054 (AD 1644-45).

10. Inscription of the Tughluqs, Bidar, District Bidar.— A published epigraph from Bidar *(Epigraphia Indo-Moslemica,* 1931-32, p. 27, Pl. XVII) was found on re-examination to contain the date of the construction of a mosque by Qubli Sultani as AH 727 (AD 1326-27) in the time of Muhammad Shah Tughluq and not AH 828 (AD 1423-24) in the time of Prince Muhammad, who was the son of Ahmad Shah I of the Bahamani dynasty.

11. Inscription of the Bahmanis, Chillergi, District Bidar.- The metrical epigraph of Muhammad Shah II records the construction of a mosque by Salar Mahmud in AH 783 (AD 1381).

12. Inscription of the Mughals, Udbal, District Bidar.- An epigraph of Aurangzeb states that this house (evidently the mosque on which it appears) was constructed in AH 1072 (AD 1662-63) by the servant of the (royal) court, Ramchand (Ramchandra) son of Pakharmal (Pokharmal) Kayath (Kayastha) Mathur (P1.32).

13. Miscellaneous Inscription, Hulagur, District Dharwad.— An undated epigraph of Adil Shahi, assignable to the sixteenth century refers to the name of the scriber as Malik Ghauth son of Ali Shah al-Husaini.

14. Inscription of the Adil Shahis, Masur, District Dharwad.— The epigraph records the construction of a fort during the reign of Muhammad Adil Shah in AH 1042 (AD 1632-33) by Muhammad Khan, son of Raja Farid Sar-i-Silk-i-Khwwasan-i-Shahi. The work was completed in AH 1045 (AD 1635-36). The text was written by the builder himself.

15. Inscription of the Adil Shahis, Misrikot, District Dharwad.— A badly damaged epigraph records the construction of a mosque during the reign of Ibrahim Adil Shah I (AD 1535-57) by Masnad-i-'Ali wa Mansab-i-Ma' ali Khan Malik 'Ainu'1-Mulk.

16. Inscription of the Mughals, Ranebennur, District Dharwad.— The inscription re cords the construction evidently of a mosque (on which it appears) in AH 1155 (AD 1742) in the reign of Muhammad Shah and in the time of Amiru'l-Umara Nawwab Abdu'l-Majid Khan Miyana (Nawwab of Savanur) by Muhammad Rahim, the custodian of the fort *(Qil' adar).*

17. Inscription of the Nawwabs of Savanur, Ranebennur, District Dharwad.— The epi graph, written by Sa'id, son of Khawaja, states that the Jami' mosque originally built in AH 1088 (AD 1677-78) by Sayyid Akram at the instance of Ankus Khan had become old and the same was renovated in AH 1185 (AD 1771-72) in the time of Nawwab (Abdu'l) Hakim Khan by Khawaja Muhammad Rahim Sadiq.

18. Inscriptions of the Nawwabs of Savanur, Savanur, District Dharwad.— The epigraph records the construction of a Jami' Mosque in the time of Diler Khan Bahadur in AH 1264 (AD 1847-48). Another record of the same ruler also states the construction of a garden with water channel under the supervision of Ghauth Khan, the Diwan in AH 1267 (AD1850-51). Another record of the same ruler in Urdu also states the renovation of a dilapidated and old mosque called Masjid-i-Kasi in AH 1273 (AD 1856-57). The text was composed by Diler Khan himself.

19. Epitaph, Kanakgiri, District Raichur.— A metrical epigraph composed by Siddiq *alias* Mirza Munshi, a native of Surat, records the construction of an Idgah in AH 1189 (AD 1775-76) by Matti Sahib.

20. Inscription, Lingsugur, District Raichur.— The inscription records the construction of a mosque in AH 1262 (AD 1846) by Mastan Subedar with the assistance of all the Muslims of the sixth Regiment. Talib was the composer of the chronogram.

21. Miscellaneous Inscription, Shahpur, District Raichur.— An epigraph fixed above the main doorway of a mosque in Shahpur locality of Mudgal, records the construction of either a doorway or a mosque in AH 993 (AD 1584-85).

22. Epitaph, Raichur, District Raichur.- The epigraph states that the tomb of Hadrat Bibi Sahiba and the father and mother of Sayyid Da'ud Ali Khan, the deceased, was completed by Sayyid Imam Ali Khan Bahadur, entitled Sayyid Da'ud Ali Khan Bahadur in AH 1214 (AD 1799-1800).

23. Inscription of the Sultans of Mysore, District Raichur.— A published inscription *(Jour, Hyd. Arch. Soc,* 1916, pp. 98-99, pi. XXXIV) from Bahadur Banda assigning the construction of a fort by Nawwab Haidar and mentioning Halchal as the *Mi'mar* (mason) was found on re-examination to contain the date as AH 1196 (AD 1781) and not AH 1194 (AD 1780).

MADHYA PRADESH

24. Miscellaneous Inscription, District East Nimar.— The inscription found from Sarai records the construction of a mosque by Aflatun Bahadur Samarqandi in AH 1060 (AD 1649-50). It also gives the name Usta Chandra Bhan probably as mason or as the supervisor of the construction.

25. Inscription of the Holkars, District Indore.— The inscription engraved on a gun, now preserved in the Central Museum, Indore, states that the gun called *Top-i-Nagiri* was manufactured at Bhanpur in AH 1218 (AD 1803-04) by Sri Lachmi Kant Sahai Parshad (Prashad) who was in the government of *Maharajadhiraja* 'Alijah Jaswant Rao Huwalkar (Holkar) Subedar Bahadur Nusrat-Jang .

26. Inscription of the Mughals, District Indore.— A record on a gun now in the Central Museum at Indore, states that the gun called *Top-i-Kubak Khan* belonging to the government of Nawwab Ali Muhammad Khan Bahadur (Rohilla), was transferred to the charge of Bazid Khan Darugha in the 25th Regnal year AH 1155 (AD 1742-43) of Muhammad Shah.

TAMIL NADU

27. Miscellaneous Inscription, Kilakkarai, District Ramanathapuram.- A damaged epitaph records the death of a lady (name not given) daughter of Salahu'd-Drn Hussain a't-Tabri in AH 700 (AD 1300-01).

28. Epitaph, Valinokkam, District Ramanathapuram.- The epitaph records the death of Shaikh Ahmad, son of Khatib Sayyid Ahmad (?) a't-Tabri, in AH 828 (AD 1424-25).

29. Persian Inscription , Pottalpudur, District Tirunelveli.- This inscription is in verse and records the construction of a tomb of Abdu'r-Rahman Qadiri, known as Rauda-i-Rahman in AH 1278 (AD 1861-62) by Valiu'llah.

30. Persian Epitaph, Tenkasi, District Tirunelveli.— The epitaph states that Shaikh Ahmad Sahib Anjan, the Tehsildar of Tankachi (Tenkasi) and a resident of Tarchanapali (Tiruchchirapalli) died in AH 1294 (AD 1877) at the age of 49 years.

UTTAR PRADESH

31. Inscription of the Mughals, Jewar, District Bulandshahar.—A metrical epigraph of Jahangir records the construction of a mosque in AH 1021 (AD 1612-13) by Sa'idu'd-Din,son of 'Imadu'd-Din, a man of lofty dignity and whose original name was Muhammad with a surname *(Laqab)* Ba-Abu.

32. Inscription of Mughals, Khurja, District Bulandshahar.—Belonging to Aurangzeb, the epitaph executed in beautiful *Nasta'liq,* records the construction of a pleasant mosque in his twenty-first regnal year AH 1089 (AD 1678-79) by Khalil, son of Pir Khan, son of Nasir.

NUMISMATICS AND TREASURE TROVE[1]

JAMMU AND KASHMIR

1. Copper Coins, Tarakpora, District Baramula.— A hoard of copper coins of the Kushan period was discovered.

KARNATAKA

2. Gold Coins, Alangoor, District Kolar.— Seven coins of Vijayanagara period and one circular piece, all made of gold were found as Treasure Trove.

MADHYA PRADESH

3. Medieval Coins, Dewas, District Dewas.— One hundred and eightv-one circular silver coins of Islam Shah Suri, Mahmud Shah I and Muzaffar Khan and one copper coin of Nazir Shah have been acquired as Tresure Trove.

4. Silver Coins, Sidikhera, District Dewas.— Out of one hundred and thirty-nine silver issues of the British period recovered, thirteen are of the Queen Victoria, while thirty-nine of Edward VII and eighty-seven of George V.

5. Medieval Coins, Isagarh, District Guna.— In the course of digging, ninety-seven copper coins of Muhammad Bin Sam were recovered as Treasure Trove.

6. Silver Coins, Mitawal, District Khargone.— A hoard consisting of six hundred and twelve silver issues of British rulers have been found, of which three are of the Queen Victoria, two hundred and seven of Edward VII and four hundred - two of George V.

7. Medieval coins, Chatarpura, District Sehore.- Of the one hundred and fifty-four silver coins acquired through Police, one hundred and forty-five are of Maratha rulers and nine of Begum Gohar (Kudsia Begum of Bhopal).

Information from : 1, Department of Archives, Archaeology and Museums, Jammu and Kashmir; 2, Department of Archaeology and Museums, Kamataka; 3 to 10, Department of Archaeology and Museums, Madhya Pradesh; 11-13, South-western Circle of the Survey; 12, Shobhana Gokhale of Deccan College Post-graduate and Research Institute, Pune; and 14, Department of Archaeology, Manipur.

8. Coins, Dehari, District Sehore.— Twenty-two silver issues of Mughal rulers were discovered.

9. Silver Coins, Sironj, District Vidisha.— In the course of digging of a house plinth, two hundred and seventy-nine silver coins belonging to Shah Alam II, Muhammad Akbar II, Muhammad Khan, Yam Ali Muhammad Khan, Kudsia Begum, Queen Victoria and Edward VII were discovered.

10. Silver Issues, Vidisha, District Vidisha.— A hoard of fifty silver coins of Kudsia Begum and Shah Jahan Begum (both of Bhopal State) and British rulers were discovered.

MAHARASHTRA

11. Copper Seal and Coins, Daulatabad, District Aurangabad.— One oval-shaped copper seal having legend *1167/ A limuddin Shaikh* in Persian, six muslim and two copper coins of Shivaji were collected.

12. Satavahana Coin, Pune, District Pune.— One copper coin of Satavahana King Hala was discovered.

13. Copper and Lead Coins, Elephanta, District Raigarh.— Ten uninscribed copper and one lead coin were collected from Morabander area.

MANIPUR

14. Coins, Khangabok, District Thoubal.— Sixty-three bell-metal coins, datable to the eighteenth century were collected.

OTHER IMPORTANT DISCOVERIES

ANDHRA PRADESH

1. Stone Pillars, District Guntur.- L.S. Rao of the South-eastern Circle of the Survey located lime stone pillars at Stambhagadda near Nagarjunakonda.

ASSAM

2. Fort, Sculptures, Architectural members and pottery, District Darrang.— H. Telagu of the Gauhati Circle of the Survey, located at Kurva a square mud fort with semicircular towers on four sides. Besides ,he also discovered stone sculptures and ornamental architectural pieces of the Ahom period at Bamangaon, Ganikutti and Mathghar, and an early historical site yielding red ware at Puthimari.

3. Terracotta head, Kamakshya Hill, District Kamrup.- H. Telagu of the Gauhati Circle of the Survey discovered a terracotta lion head datable to a late medieval period.

4. Stone sculptures, District Kamrup.- P.M. Das of the Gauhati Circle of the Survey discovered three rock-cut sculptures near the western gate of Kamakshya temple.

GOA, DAMAN AND DIU

5. Cairn Circles, Curdi, Goa.- B.R. Mani, K.P.S. Bhadoria and V.B. Mathadhikari of the South-western Circle of the Survey discovered seven caim circles (measuring 4.50 m to 10.30 m) in the vicinity of the Mahadeva temple at Curdi. Besides a human figure, carved in high relief on the rocky surface was also noticed.

GUJARAT

6. Bronze Image, Patan, District Mahesana.- R.D. Singh of the Western Circle of the Survey discovered a bronze image of Adinatha bearing V.S. 1421 on the back, in the vicinity of Sahasralinga talao (Pl. 33).

7. Temple, Mandala, District Vadodara.- Narayan Vyas of the Western Circle of the Survey noticed a small ruined Siva shrine datable to the twelfth century AD.

8. Brass Image, Mandala, District Vadodara.— Narayan Vyas of the Western Circle of the Survey discovered a small brass image of goddess Ambika bearing Sam vat 1434 from the above site.

9. Sculptures, Mandala, District Vadodara.— Narayan Vyas of the Western Circle of the Survey discovered images of Brahmanical deities including an image of Saptamatarika datable to the twelfth century AD.

10. Step-well, Mandala, District Vadodara.— Narayan Vyas of the Western Circle of the Survey noticed an inscribed step-well datable to the early medieval period.

11. Sculptures, Narsipura, District Vadodara.— B.K. Saran, Narayan Vyas, Vilas Jadhav, and A.R. Shah of the Western Circle of the Survey, noticed a number of sculptures and hero-stones assignable to the twelfth-thirteenth century AD.

12. Sculptures, Undera, District Vadodara.— Narayan Vyas of the Western Circle of the Survey noticed a number of sculptures including architectural fragments of the Brahmanical and Jain a pantheon. Notable among them are the images of Mahisasuramardini, Parvati, Ganesa, Brahma and Jaina *tirthankaras.*

HIMACHAL PRADESH

13. Stone Sculptures, District Sirmour.— The Department of Language and Culture, Government of Himachal Pradesh discovered from Mandherwa three stone sculptures of Gupta and post-Gupta periods, now kept in the State Museum, Shimla.

JAMMU AND KASHMIR

14. Stone Inscription, Chameer, District Anantnag.— A fragmentary stone slab inscrip tion in Sarada script assignable to fourteenth century was discovered by the Directorate of Archives, Archaeology and Museums, Srinagar.

15. Rock Carvings, Saspola, District Leh.- P.S. Thakur and L.P. Thapliyal of the Ladakh Project of the Survey, discovered near Saspola a number of rock carvings on both the sides of the river Indus.

MADHYA PRADESH

16. Medieval Wall Paintings District Chhattarpur.— In the course of exploration, G.L. Raikwad, Registering Officer, Sagar, located medieval wall paintings at Alipur and Mahoba.

17. Temple and Jaina Sculptures, Nemawar, District Dewas.— B.L. Nagarch of Temple Survey Project (North) of the Survey, discovered a Siva temple locally known as Akadavan on the northern outskirts of the village. He also discovered two images of Adinatha, one standing and the other seated, on the north of Siddhanatha temple. The images are assignable to the eleventh century AD. An image of the four armed Ambika standing in *tribhanga* pose (PI. 34) under a mango tree and fixed in the wall of the *matha* near the above referred temple was also discovered. It bears an inscription on its pedestal and is dated V.S. 1183 (AD 1126).

18. Medieval sculpture, Un, District East Nimar.— B.L. Nagarch of the Temple Survey Project (North) of the Survey, discovered an image of Padmavati of the Paramara period.

19. Stone Image, Alirajpur District Jhabua.— A blackstone image of Harihara, datable to the medieval period was picked up by Upadhya of Tribal Department, Bhopal. The image is now preserved in the Bhopal Museum, Bhopal.

20. Siva Temple, Gaddi, District Sagar.— The Directorate of Archaeology and Museums, Madhya Pradesh, noticed a Siva Temple on the Sagar-Bina Road having images of various deities on the facade. Important among them are Bhairavi, Brahma, Uma-Maheswara, Lakshmi-Narayana, Surya and Vidyadharis.

21. Remains of Temple, Tinsua, District Sagar.— The Directorate of Archaeology and Museums, Madhya Pradesh, located remains of a temple locally known as Bhismal Baba-ka-mandir on the Sagar-Chhattarpur Road.

22. Vishnu Temple, Vineyaka, District Sagar .— Remains of a Vishnu temple was located by R. L. Raikwar, Registering officer, Sagar.

23. Image of Surya, Ujjain, District Ujjain.- B.L. Nagarch of the Temple Survey Project (North) of the Survey discovered a stone image of Surya kept in the compound of the Avanti Parsvanatha temple. The *parikara* of the image is carved with *dvadasadityas.*

24. Image of Siva, Ujjain, District Ujjain.- B.L. Nagarch of the Temple Survey Project (North) of the Survey discovered an image of Yogesvara Siva in the compound of the Bhatri-hari cave. Of the four arms, the lower two are in *dhyanamudra* and the upper two hold *trisula* and *khatvanga.*

25. Medieval Sculpture, Ahmedpur, District Vidisha.- C. Krishna and R.R. Singh of the Department of Archaeology and Museums, Madhya Pradesh, discovered four brahmanical sculptures assignable to medieval times.

26. Vishnu Image, Dandapur, District Vidisha.- M.K. Maheshwari and C. Krishna of the

Department of Archaeology and Museums, Madhya Pradesh. noticed a stone image of Vishnu of the Paramara period. The sculpture is now on display in Vidisha Museum.

MAHARASHTRA

27. Late Medieval site, Aurangabad, District Aurangabad.— Ajit Kumar and M. Mahadevaiah of the South-western Circle of the Survey, located a late medieval mound on the right bank of the Kaum (Kham) river towards the east of Bibi-ka-Maqbara. Sherds of Chinese porcelain, glazed ware, chert bead and decorated terracotta human head and animal figurines of bull, horse and elephant were also picked up.

28. Mughal Paintings, Daulatabad, District Aurangabad.— B.R. Mani of the South-western Circle of the Survey noticed two Mughal miniature paintings set in alcoves with glass frames in the western wall of Manpuri Swami math and Samadhi at Daulatabad village.

29. Sculptures, Daulatabad, District Aurangabad.— Ajit Kumar and M. Mahedevaiah of the South-western Circle of the Survey discovered stone images of Lakshmi-Narasimha, Ganesa, *nandi, dwarpala* and Uma-Mahesvara, all assignable to early medieval period.

30. Microliths, Ellora, District Aurangabad.— Ajit Kumar and M. Mahadevaiah of the South-western Circle of the Survey collected microliths including blades, lunates, points made of chalcedony.

31. Kailasa Temple, Ellora, District Aurangabad.— M.N. Deshpande identified the mural paintings on the exterior walls of the *vimana* of the temple as of Natha affiliation. Among the Hatha yogic postures painted on the wall, there is a painting of Chaturanginatha on the rear wall and the extant portion of the painted inscription still retains the word 'Chourangi' in *devanagari* characters of fourteenth century AD. It appears that the temple of Kailasa which came to be known as a *Jotirlinga* was visited by Natha yogis, and that the exterior walls were covered at their instance, with murals depicting *Natha* yogis and their Hatha Yogic practices. The popular belief that these paintings were executed by Ahilyabai Holkar may have to be revised in the light of this identification.

32. Medieval Sites, Fatehabad, District Aurangabad.— B.R. Mani of the South-western Circle of the Survey noticed two medieval sites in the vicinity of Daulatabad. Bricks, tiles and pottery of the medieval period were also noticed at Khapri and Fatehabad.

33. Rock-cut Caves, Kanakshil, District Aurangabad.— B.R. Mani assisted by K.P.S. Bhadoria and V.Y. Songirkar of the South-western Circle of the Survey noticed rock-cut caves with water cistern and mutilated sculptures of late medieval period.

34. Rock-cut Caves and early historical site, Sharanpur, District Aurangabad.— C.L. Suri assisted by P.N. Kamble, K.P.S. Bhadoria and D.M. Kulkami of the South-western Cir cle of the Survey noticed rock-cut caves and water cisterns on the hillock of Sharanpur, west of Aurangabad. Sherds of early historical pottery were also noticed at the foot of the hill.

35. Chalcolithic site, Waladgaon, District Aurangabad.— In the course of exploration on the western bank of the Kaum river, B.R. Mani assisted by K.P.S. Bhadoria of the South-western Circle of the Survey located a chalcolithic site. The important surface finds included Savalda, burnished grey and other associated pottery and microliths made of chalcedony and jasper .

36. Medieval temples, Chaklamba, District Bhir.- P.N. Kamble assisted by K.P.S. Bhadoria of the South-western Circle of the Survey located two Siva temples. The first one, known as Rudreshwar temple, is assignable to the early medieval period and the second one is known as the Devatala temple, datable to the late-Maratha period. A Devanagari inscription of three lines was also noticed on the central beam of *sabhamandapa.*

37. Chalcolithic site, Darvanta, District Bhir.- P.N. Kamble and K.P.S. Bhadoria of the South-western Circle of the Survey, discovered a chalcolithic site in Gevrai taluk on the left bank of the river Sindphana and collected sherds of painted pottery, handmade grey, black-and- red and thin red slipped wares and pieces of shell bangles and ear-pendants.

38. Chalcolithic and early historical site, Hingangaon, District Bhir.- P.N. Kamble and K.P.S. Bhadoria of the South-western Circle of the Survey located a chalcolithic site at Hingangaon on the right bank of the river Sindphana. Microlithics such as flakes, cores and blades, made of chert, handmade grey-ware, black-and-red-ware, red slipped ware and stamped sherds of an early historical period and Mughal-Maratha pottery and kiln brunt bricks were also collected from the site.

39. Medieval temple, Maradsidh, District Bhir.-P.N. Kamble and K.P.S. Bhadoria of the South-western Circle of the Survey noticed a Siva temple, locally known as Mallikarjuna temple of early medieval times.

40. Medieval temple, Morgaon, District Bhir.- A Siva temple datable to the early medieval times was located by K.P.S. Bhadoria of the South-western Circle of the Survey .Besides, a *sati* stone and images of Vishnu, Parasurama, Kartikeya and Chamunda were also noticed.

41. Early historical pottery, Rajpuri, District Bhir.- P.N. Kamble and K.P.S. Bhadoria of the South-western Circle of the Survey, collected black-and-red and thin red-slipped wares and terracotta bull figurines from Khajanchi Bavdi on the right bank of the Bendsura river.

42. Potsherds, District Bhir.— P.N. Kamble and K.P.S. Bhadoria of the south-westem Circle of the Survey collected chalcolithic potsherds from Mankapuri, about half-a-km away from left bank of the river Sindphana.

43. Medieval temple, Yelamb, District Bhir.- P.N. Kamble and K.P.S. Bhadoria of the South-westem Circle of the Survey noticed a temple, dedicated to Mahadeva.

MEGHALAYA

44. Palaeoliths, Garo Hills, Meghalaya.— In the course of exploration in the Rongram and the Ganol river valleys in the Central Garo Hills, T. C. Sharma and H.C. Sharma. assisted by Minarva Sonowal and students of M. Sc. final year of Gauhati university, discovered a large number of stone-tools from Michimagiri IV and Didami Abri. The discovery consisted of choppers, cleavers, discoids, scrapers, points, borers, backed knives, blades, flakes and cores, all made of dolerite basalt.

PUNJAB

45. Remains of Architectural Pieces and Antiquities, Sanghol, District Ludhiana.— In the course of scientific clearance of the Stupa and Monastery complex, the Department of Cultural Affairs, Archaeology and Museums, Punjab, noticed a heap of railing pillars of stupas (Pis. 35-36). In all, one hundred and seventeen pieces were recovered, of which sixty-five were railing stones and four comer pillars, thirty-five cross--bars and thirteen coping stones. The upright pillars depicted beautiful damsels, *sala-bhanjikas* in different poses, devotees, etc. Besides, a stucco-head of Buddha and four terracotta male heads, datable to the Gupta period were also discovered. An acrobatic dancer was the important discovery among the sculptures.

RAJASTHAN

46. Painted rock-shelter, Rampuria, District Bhilwara.— R.D. Singh, Narayan Vyas, and K.V. Rao of the Western Circle of the Survey, discovered near the village a group of six rock-shelters, of which two are assignable to the chalcolithic period.

47. Microliths, Badoli, District Chittaurgarh.- R.D. Singh, Narayan Vyas and K.V. Rao of the Western Circle of the Survey, collected microliths such as flakes, cores, etc., made of quartz and chalcedony.

48. Medieval sculptures, Charchoma, District Kota.— R.D. Singh of the Western Circle of the Survey discovered a number of sculptures including architectural fragments of the brahmanical pantheon.

49. Palaeoliths, Gaughat, District Kota.- R.D. Singh, Narayan Vyas and K.V. Rao of the Western Circle of the Survey collected from the river bed of the Parban, stonetools such as handaxes having a prominent bulb of percussion on the back.

50. Microliths, Dhaba, District Kota.- R.D. Singh, Narayan Vyas and K.V. Rao of the Western Circle of the Survey, collected from an agricultural field in between Dhaba and Char-choma microliths including flakes and fluted cores.

51. Palaeoliths, Kherdi, District Kota.- R.D. Singh, Narayan Vyas, and K.V. Rao of the Western Circle of the Survey, collected handaxes, cores and scrapers from an agricultural field.

52. Copperplate inscriptions and medieval sculpture, Agewa, District Pali. — R. Pathak of the Western Circle of the Survey discovered three copperplates in Nagari characters ranging in date from seventeenth to the nineteenth century AD. The plate records the gift of a land to a *math.* Besides, he also discovered one image each of Hunuman, Lakshmi-narayana and Siva.

53. Palace and Step-well, Agewa, District Pali.- R. Pathak of the Western Circle of the Survey noticed a ruined palace and a step-well datable to sixteenth and eighteenth century AD respectively.

54. Copperplate, palace and step-well, Babra, District Pali.- R. Pathak of the Western Circle of the Survey discovered one each of copperplate (Samvat 1700), late medieval palace with decorative *jali* work and step-well.

55. Palace, Bar, District Pali.- R. Pathak of the Western Circle of the Survey noticed a palace in ruined condition datable to late medieval times.

56. Step-well, Bhakarwas, District Pali.- R. Pathak of the Western Circle of the Survey noticed a late medieval ruined step-well.

57. Copperplate, Deolikalan, District Pali.- R.Pathak of the Western Circle of the Survey discovered a nine-lined copperplate inscription (Samvat 1712). The plate records the donation of land.

58. Step-well, Deolikalan, District Pali.- R. Pathak of the Western Circle of the Survey noticed a late medieval step-well.

59. Palace, Deoria, District Pali.- R. Pathak of the Western Circle of the Survey noticed a palace assignable to the eighteenth century.

60. Copperplate, Giri, District Pali.— R.Pathak of the Western Circle of the Survey discovered a twenty two lined copperplate inscription (Samvat 1920). The inscription refers to the donation of land.

61. Copperplate and Step-well, Jhuntha, District Pali.- R.Pathak of the Western Circle of the Survey noticed a twenty seven lined copperplate inscription (Samvat 1922) and a step-well.

62. Step-wells, District Pali.— R.Pathak of the Western Circle of the Survey noticed step-wells at Khinwara, Kushalpura, Manpura, Nanna, Patwa, Phoolmal, Piplia (Kalan), Rajoi (Kalan) and Sumel.

63. Copperplate, Lawachas, District Pali.— R.Pathak of the Western Circle of the Survey discovered two small copperplates datable to the eighteenth century.

64. Medieval Sculptures, Phoolman, District Pali.— R. Pathak of the Western Circle of the Survey discovered images of Ganesa, Parvati and Mahishasuramardini.

65. Copperplate, Piplia (Kalan), District Pali.- R. Pathak of the Western Circle of the Survey discovered a copperplate (V.S. 1938). Th# plate records the donation of land by a local resident of Piplikalan.

66. Sculptures, Sardar Samand and Sumel, District Pali.— R. Pathak of the Western Circle- of the Survey discovered a number of sculptures including the images of Vishnu, Parvati, Ganesa, *nandi,* Vaikunthamurti and Siva-Zmga and architectural fragments.

67. Copperplate, Sumel, District Pali. - R. Pathak of the Western Circle of the Survey noticed a nine lined copperplate inscription (Samvat 1719) recording the donation of land.

68. Palace, Sumel, District Palir- R. Pathak of the Western Circle of the Survey noticed a palace assignable to the eighteenth century.

69. Copperplate inscriptions, Viratikalan, District Pali.— R. Pathak of the Western Circle of the Survey discovered three copper-plate inscriptions, ranging in date between the fifteenth and nineteenth century AD.

70. Paintings, Viratia Khurd, District Pali.- R. Pathak of the Western Circle of the Survey noticed paintings on the ceilings and walls of the *garbha-griha* of the Ramdeoji temple.

TAMIL NADU

71. Copper box and sculptures, Ranganathaswami temple, Erukkampattu, District North Arcot.— In the course of repairs to the entrance of the *garbha-griha* of the temple a crumbled copper box having pieces of a gold plated *chakra,* embossed *srivatsa* (PI. 37), silver *sannha* and semi-precious stones was discovered by the Southern Circle of the Survey. . Probably these objects were kept in the copper box and buried at the threshold of the *grabha-gnha* while installing the main deity.

Besides, stone sculptures including images of Ranganatha, standing Vishnu, half-buried Anantasayi, standing *dwarpalas* and a pair *of asura* probably Madhu and Kaitabha, all belonging to the Chola period were also discovered during reconstruction of the above temple.

72. Antiquities, Airavatesvara temple, Darasuram, District Thanjavur.— The Southern Circle of the Survey, in the coarse of re-erecting the fallen southern *prakara* wall unearthed a number of interesting antiquities. The unearthed objects included bronze pedestals depicting Siruttondar with his consort and their son Siralan and Narasingamunaiyarayar (P1.38); Durga; crawling Krishna (PI. 39); copper bowls; *pooja* utensils; and ornamental pieces. A hoard of Chola copper coins (PI. 40) was also recovered from the site.

UTTAR PRADESH

73. Paintings, District Almora.- Yoshodhar Mathpal, Folk Culture Museum, Bhimtal, assisted by P.K. Tiwari and Suleman Siddiqui, Anthropoligist, Lucknow and Assistant Engineer, Almora respectively in the course of exploration, discovered four painted rockshclters at Pharakanauli and one at Kasardevi. Paintings were executed in dark and red colours having dancing and copulation scenes.

RADIOCARBON DATES

Radiocarbon dates measured ' from archaeological and Quaternary samples[2] are presented in the following pages. The dates were determined at the Physical Research Laboratory, Ahmedabad. All the dates are based on 5730 ±40 years, half-life value of radiocarbon and are uncorrected for $^{14}C/^{12}C$ variations. The year 1950 is the base year to convert these dates into BC/AD scale.

ARUNACHAL PRADESH

1. Ziro Valley, District L. Subansiri

PRL-924. Late Pleistocene; > 31,000
Wood from stream bank section embedded in peat horizon; depth 2.0 m. Sample no. 83E 14/4/1.

PRL-926. Late Pleistocene; > 31,000
Peat from stream bank section;
Layer peat horizon; depth 2.5m.
Sample no. 83 E 14/4/2.

ASSAM

2. Digboi, District Dibrugarh

PRL-581. Semi-carbonized wood; 9720 ± 230 (7770 BC)
spot sample; depth 1.10 m.
Sample no.

[1] Contributed by D.P. Agrawal, Sheela Kushumgar and Navin Juyal. For further details of the dated samples, the submitting organizations may be contacted.

'Samples submitted by : 1-5, Quaternary Geology Division, Geological Survey of India, Shillong; 6, Director Manjhi Excavation, Banaras Hindu University, Varanasi ; 7, North-western Circle of the Survey, Srinagar; 8, Deccan College Post-graduate and Research Institute, Pune; 9, Director, Archaeology and Museums, Madhya Pradesh; 13, Hindustan Zinc Ltd., Zawar Mines, Udaipur; 10-12, 17-18, Department of History, Delhi University, Delhi; 14-15, Department of Ancient History and Archaeology, University of Madras, Madras; 16, Department of Archaeology, Banaras Hindu University, Varanasi; and 19-21, Archaeology Department, Colombo, Sri Lanka.

3. Matikhad, District Dibrugarh

PRL-582. Semi-carbonized wood; spot sampling in groove; depth 2.54—2.58 m. Sample no. W $_1$ QG.	17540 +680 - 630 (15590 BC)
PRL-578. Semi-carbonized wood; Groove sampling; depth 2.54— 2.58 m. Sample no. S 11 9A.	18470+ 5°° — 480 (16520 BC)
PRL-583. Semi-carbonized wood; Groove sampling; depth 2.20—2.25 m. Sample no. W_2/QG.	17280 +460 -440 (15330 BC)

4. Tinsukia, District Dibrugarh

PRL-580. Peat; Groove sampling; depth 2.16-2.20m. Sample no. QG/F/4.	12440 +360 -350

5. Drgli Bakurpara, District Goalpara

PRL-922. Recent to Late Holocene; Organic-rich clay from pit; depth 50 cm. Sample no. GS1/LB/8/82.	470 ± 100 (AD 1480)

BIHAR

6. Manjhi, District Saran

PRL-979. Period III; Charcoal from stratum 3; depth 307-360 cm. Sample no.l.	1720 ± 140 (AD 230)
PRL-980. Late phase of NBP Period; Charcoal from stratum 7 ; depth 656—662 cm. Sample no. 4A.	1990 ± 140 (40 BC)
PRL-983. Early phase of NBP period ; Charcoal from Stratum 10 ; depth 965-994 cm. Sample no. 7A.	2420 ±140 (470 BC)

JAMMU AND KASHMIR

7. Semthan, District Anantnag

PRL-941. NRE; Charcoal from layer 33 ; Sample no. SMN-81/CG20.	2260 ± 140 (310 BC)
PRL-945. NBB; Charcoal from layer 33; Sample no. SMN-81/CC-24.	2340 ± 110 (390 BC)

MADHYA PRADESH

8. Bhimbetka, District Raisen

PRL-792. Acheulian Industry ; Calcium carbonate from Trench BTK III F 23 ; Locus K7; depth 121-125 cm. Sample no. BTK-13. Comment : Date younger than expected.	15550^{+340}_{-330} (13600 BC)

9. Dangawada, District Ujjain

PRL-687. Malwa Culture ; Charred grains from Trench IV; Layer 9; depth 1.95 m. Sample no. 7.	3930 ± 150 (1980 BC)

RAJASTHAN

10. Aguncha, District Ajmer

PRL-930. Wood ; Wood from old mine shaft; depth 20m. Sample no. 4.	2940 ± 100 (990 BC).

11. Khetri, District Sikar

PRL-929. Wood; Wood from old mine shaft; depth 20 m. Sample no. 3.	350 ± 80 (AD 1600)

12. Rajpur Dariba, District Udaipur

PRL-928. Wood ; 2450 ± 140 (500 BC)
Wood from old mine shaft; depth not recorded. Sample no. 2.

13. Zawar Mala Mine, District Udaipur

PRL-932. Ancient Mining Operation; 2480 ± 100 (530 BC)
Charcoal from old working exposed in the 470 MRL; underground RL 486 MRL. Sample no. ZM/1.

PRL-933. Ancient Mining Operation; 1990 ± 140 (40 BC)
Charcoal from old working; RL 566 MRL. Sample no. ZM/4

PRL-935. Ancient Mining Operation ; 840 ± 130 (AD 1110).
Charcoal from ash dump due north of Ramanatha temple from slag heap; depth 15 cm. Sample no. ZM/8.

TAMIL NADU

14. Kanchipuram, District Chingleput

PRL-785. Black-and-Red Ware; 880 ± 120 (AD 1070)
Charcoal from Trench KCM 4; Extn.. clay deposit sealed by Layer 5; Locus I Bl; depth 362 cm. Sample no. Nil.

15. Adiyamankottai, District Dharmapuri

PRL-937. Early centuries of Christian era; 1770 ± 150 (AD 180)
Charcoal from Trench AMK-2 ; Layer Pit 24 sealed by dump 2, corresponding to layer 13 ; Locus I-II; depth 437 cm. Sample no. 1.

UTTAR PRADESH

16. Khairadih, District Ballia

Sample	Date
PRL-1049. Black-and-Red Ware ; Charcoal from Trench KDH-3 D' l ; Layer 8 ; depth 648 cm. Sample no. Nil.	**2980 ± 160 (1030 BC)**
PRL-1050. Northern Black Polished Ware Charcoal from Trench C'5 ; KDH-3; Layer 2; depth 167-255 cm. Sample no. Nil.	**2120 ±160 (170 BC)**

WEST BENGAL

17. Bahiri, District Birbhum

Sample	Date
PRL-867. Black-and-Red Ware ; Charcoal from Trench BHR IV; Layer 4; depth 2.25m. Sample no. 2.	**2560 ±150 (610 BC)**
PRL-869. Black-and-Red Ware; Charcoal from Trench BHR III; Layer 4; depth 1.5 m. Sample no. 4.	**2610±180 (660 BC)**

18. Arara, District Burdwan

Sample	Date
PRL-931. Black-and-Red Ware; Charcoal from Trench 1; Layer 5; depth 1.91 m. Sample no. 5.	**2860±120 (910 BC)**

SAMPLES FROM ABROAD

SRI LANKA

19. Alu-Lena, District Kegalle

PRL-976. Geometric Microliths; Charcoal from Trench AAX; Layer 3; depth 150 cm. Sample no. ALK 3-	9680±150 (7730 BC)

20. Maduru-Oya, District Polonnaruwa

PRL-828. Charcoal; Charcoal found embedded in an ancient reservoir bund depth 300 cm. Sample no. 2.	1420±140(AD530)

21. Batadomba, District Ratnapura

PRL-859. Geometric microliths; Charcoal from Trench 16 g; Layer 6A depth 200 cm. Sample no. Bd-16g-6A.	14280^{+380}_{-370} (12330BC
PRL-860. Geometric microliths; Charcoal from Trench 16h; Layer 5; depth 170 cm. Sample no. Bd-16h-5.	13510^{+450}_{+430} (11560BC)
PRL-920, Geometric microliths; Charcoal from Trench 17; Layer 7B; depth 240 cm. Sample no. Bd-17-7B.	20730^{+760}_{-690} (18780 BC)

PALAEOBOTANICAL AND POLLEN ANALYTICAL INVESTIGATIONS

The present report incorporates the work done on the subject at Birbal Sahni Institute of Palaeobotany, Lucknow.

PUNJAB

1. Rohira and Mahorana, District Sangrur.— The carbonized grape pips briefly reported earlier (1983-84, p. 177) from Rohira (Period IA: *Circa* 2300-2000 BC) and Mahorana (Period IB : *Circa* 2100-1900 BC) have been studied in detail and found to compare with those of *vitis vinifera* L. Their reference either to wild or cultivated form, is difficult because many species in *vitis* are sympatric with one or more others and are extremely variable. However, on morphological grounds these ancient grape pips indicate their close resemblance with those of cultivated form.

UTTAR PRADESH

2. Sringaverapura, District Allahabad.— In continuation to the specific identification of wood charcoals already reported from Period I *(1983-84,* p. 178), some more charcoals from different cultural horizons in SVP-1, YA3-Qd.3 *{Circa* 950-700 BC) were identified. The details of which are as under:

A. Period HA: The Layer 18 *(Circa* 950-800 BC) yielded *albizia lebbeck, madhuca indica, salmalia malabarica, mesua ferrea* and *betula utilis.*

B. Period IIB: Layers 16 and 17 *(Circa* 800-700 BC) yielded *mangifera indica, albizia lebbeck* and bamboo.

The woods of *albizia lebbeck, madhuca indica, salmalia malabarica, mangifera indica* and the bamboo were locally available from the surrounding forests. *Mesua ferrea* wood is one of the hardest and heaviest timbers in India. The exploitation of *mesua ferrea* and *batula utilis* as evident by their wood remains at Sringaverapura is to be reckoned with.

3. Ahichchhatra, District Bareilly.— Charcoals in sample no. TF 297 (Painted Grey Ware) have been studied and tentatively identified as of *anogeissus* and *shorea* species.

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[1] Contributed by K.S. Saraswat, N.K. Sharma and Kumari Chanchala of the Birbal Sahni Institute of Palaeobotany, Lucknow.

4. Narhan, District Gorakhpur.- The plant remains (Pis. 41-42) from different cultural horizons dating from *Circa* 700 BC to AD 400 have been investigated and identified as follows:

Archaeological **number**	**Cultural Sequence**	**Nature of Materials and Plant remains**
NRH-84 Trench C5, Stratum 10, Depth 5.35 m.	Pre-N.B.P. (700-600 BC)	Pottery pieces with copious impressions of the husk and spikelets belonging to the cultivated strain of rice *(oryza sativa* L.).
NRH-84, Trench C5, Stratum 7, Depth 2.13-2.72m.	N.B.P. (500-400 BC)	Mud clods containing the mass of carbonized grains and a few uncarbonized fruit parts and seeds embedded in them. Carbonized grains belong to those of cultivated rice *(oryza sativa* L.), barley *(hordeum vulgare* L.), Indian dwarf wheat *(triticum sphaerococcum* Perc.), bread wheat *(triticum aestivum* L.), black gram *{vigna mungo* (Linn.) Heppcr), green gram *{vigna radiata* (Linn.) Wilczek), pea *(pisum sativum* L.), khesari *lathyrus sativus),* kodon millet *(paspalum scrobiculatum* L.) and *sesame* or til *(Sesamum indicum* L.) Fruit-stone of jujube *(ziziphus mauritiana)* and endocarp pieces of emblic-myrobalan or anwala *{phyllanthus emblica)* have been recovered in uncarbonized state. Straw remains mixed with the clay of mud plasters, on maceration revealed the cuticle remains of the husk and leaf of paddy. A few cuticle remains of *desmostachya* and other wild grasses suggest that these were also used as the binding material in the mud plasters. Mud plasters with reed stem and grass leaf impressions comparing with those of *saccharum* species. Leaf cuticles recovered, suggest the use of *saccharum spontaneum* on which plasters of mud were applied for making the huts.

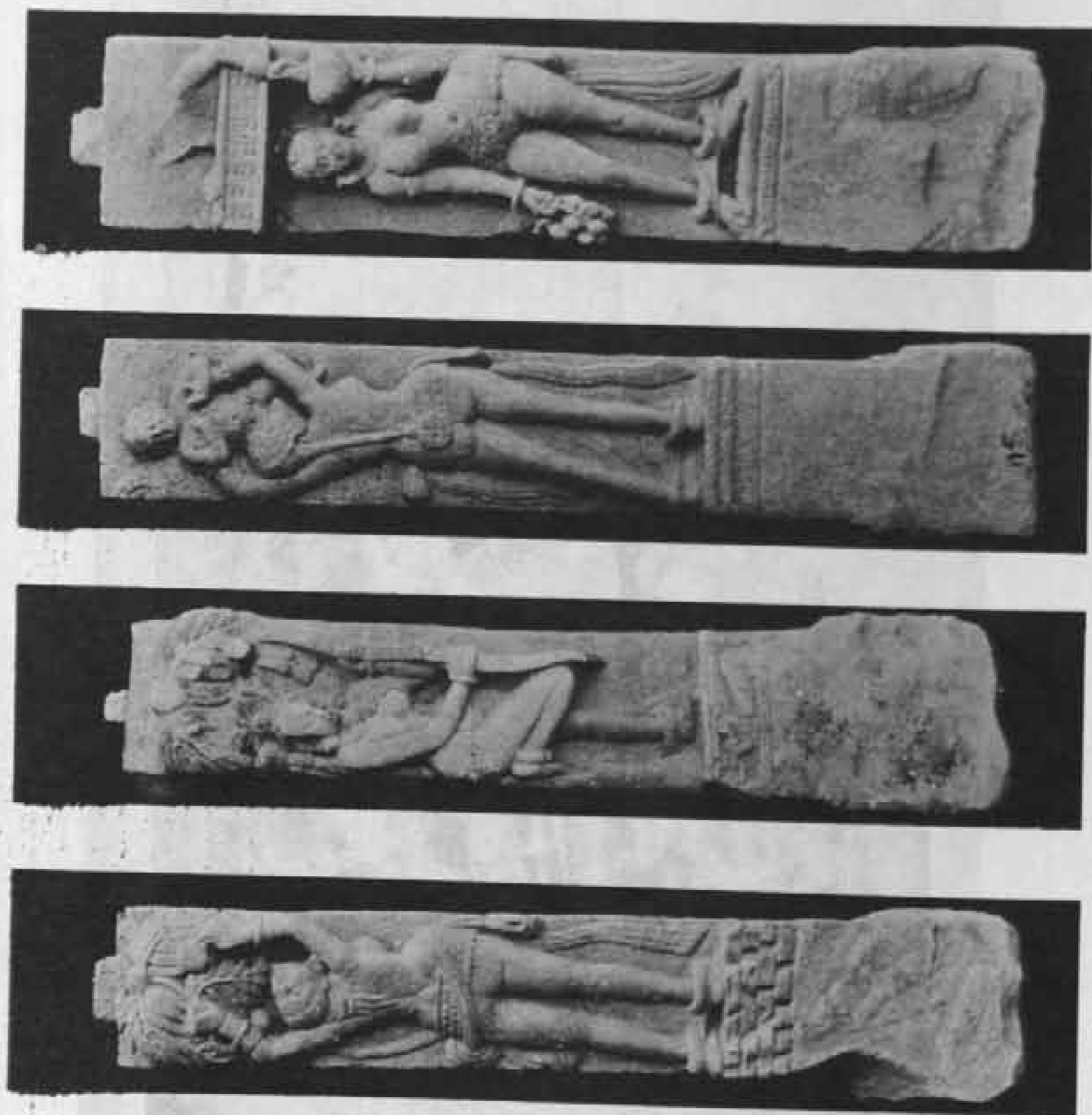
Archaeological number	Cultural sequence	Nature of Materials and Plant remains
		Mud plaster pieces with paddy husk embedded in them also bears an impression of Bamboo stem. A few remains of cuticle belonging to some species of Bamboo have been recovered. Possibly, the ancient settlers made use of Bamboo for pole or beam.
NRH-84 Trench 01, pit 2 Depth 2.65-2.70m.	Trench highly disturbed . Its chronological position is difficult to ascertain. On the basis of associated finds. It can be dated to first-second century AD.	Impression of woven textile on the inner face of a potsherd. Bits of convoluted cotton fibres *(gossypium* species) have been encountered from the impression. Pottery pieces showed the impressions of cultivated rice spikletes and husk.
NRH-84 Trench C6 Locus: Pit, Stratum: S.B. (3), Depth 1.20 -1.35 m.	Early Gupta period (fourth century AD).	Reed impressions on the mud plasters similar to those of *saccharum spontaneum* from N.B.P. level.



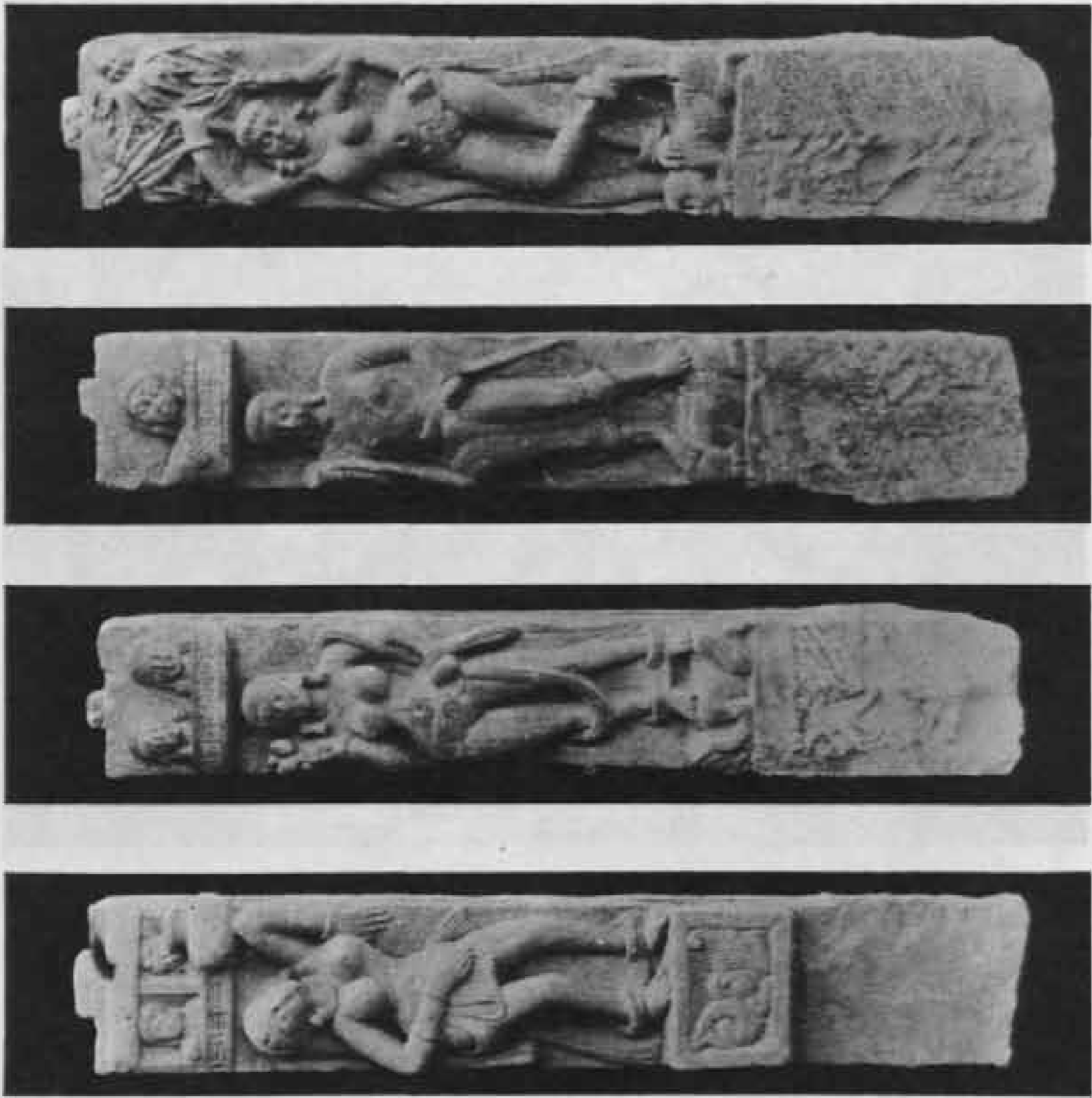
53. Patan: Bronze icon of Adinatha. *See page 146*



34. Nemawar: Stone image of Ambika. *See page 148*



35. Sanghol: Stone railing pillars. *See page 151*



56. Sanghol: Stone railing pillars. *See page 151*



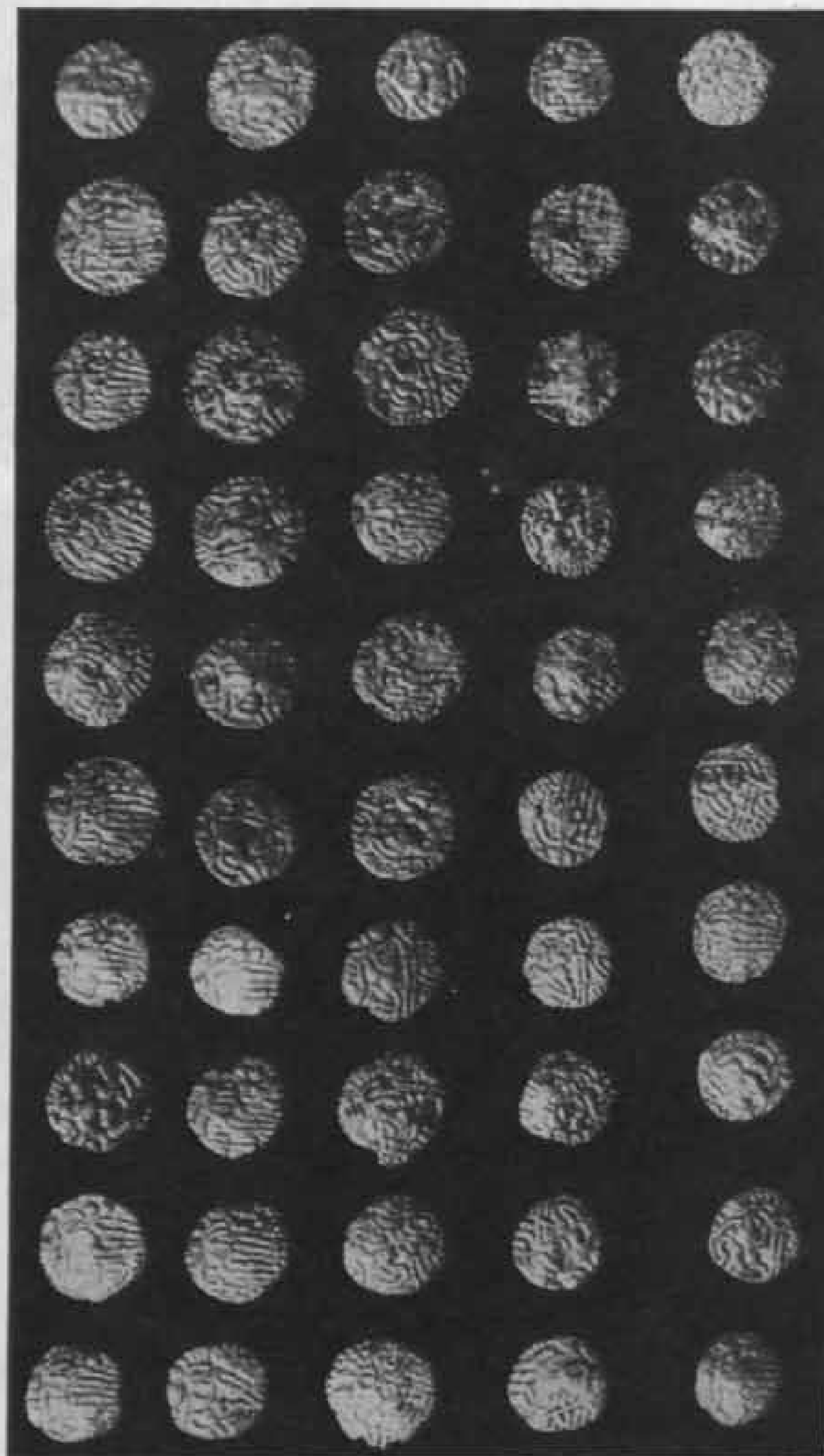
37. Erukkampattu: Gold objects. *See page 154*



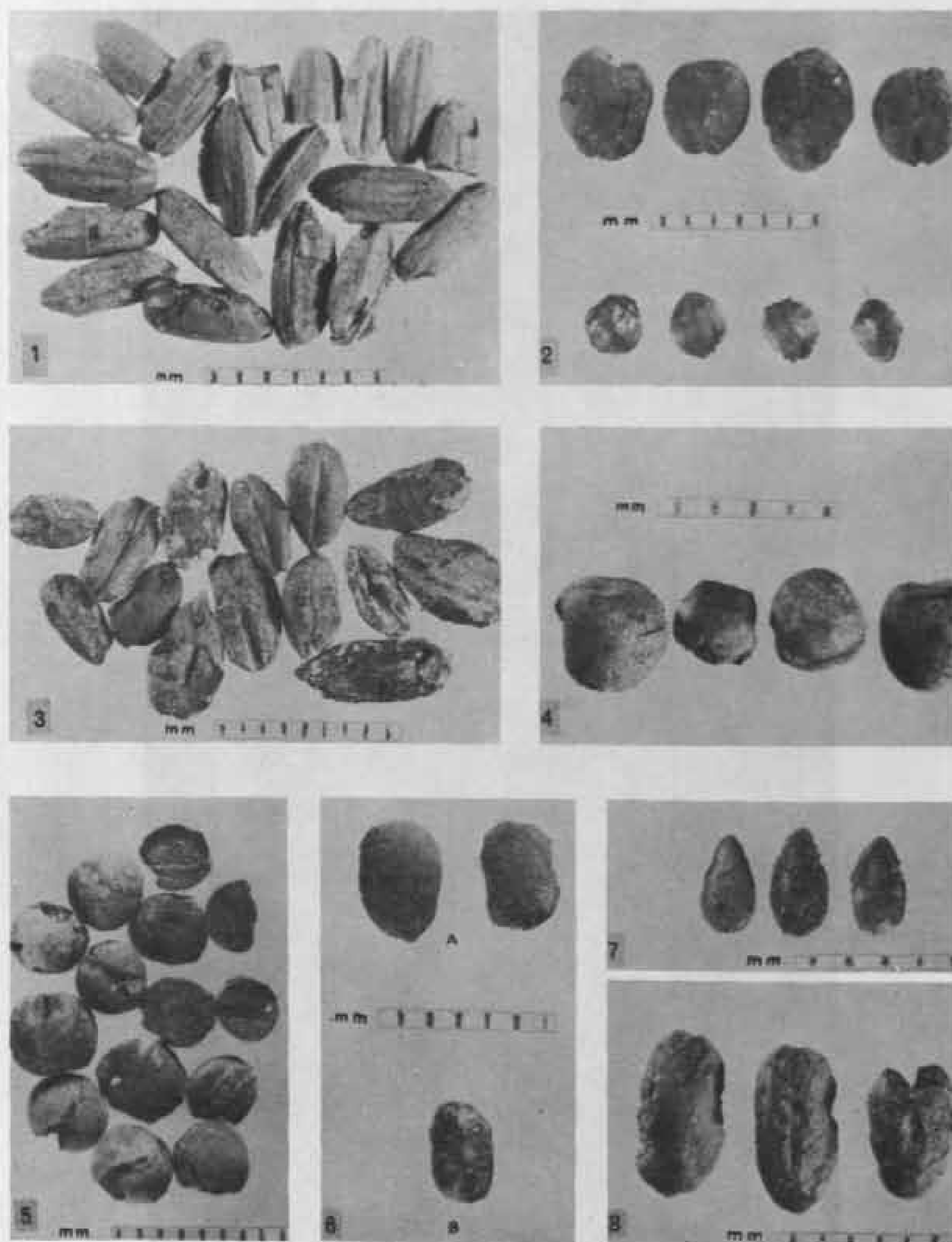
58 Darasuram: Bronze images. *See page 154*



39. Darasuram: Bronze image of Krishna. *See page 154*

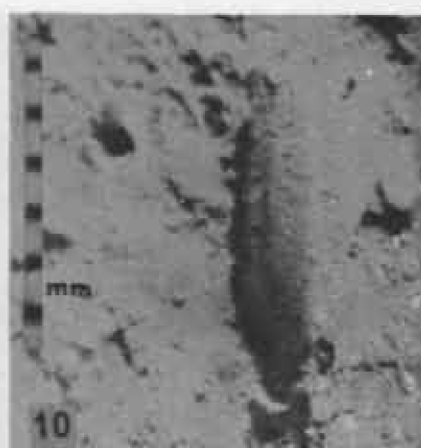


40. Darasuram: Copper Coins. *See page 154*



41. Narhan: Plant remains, *See page 162*





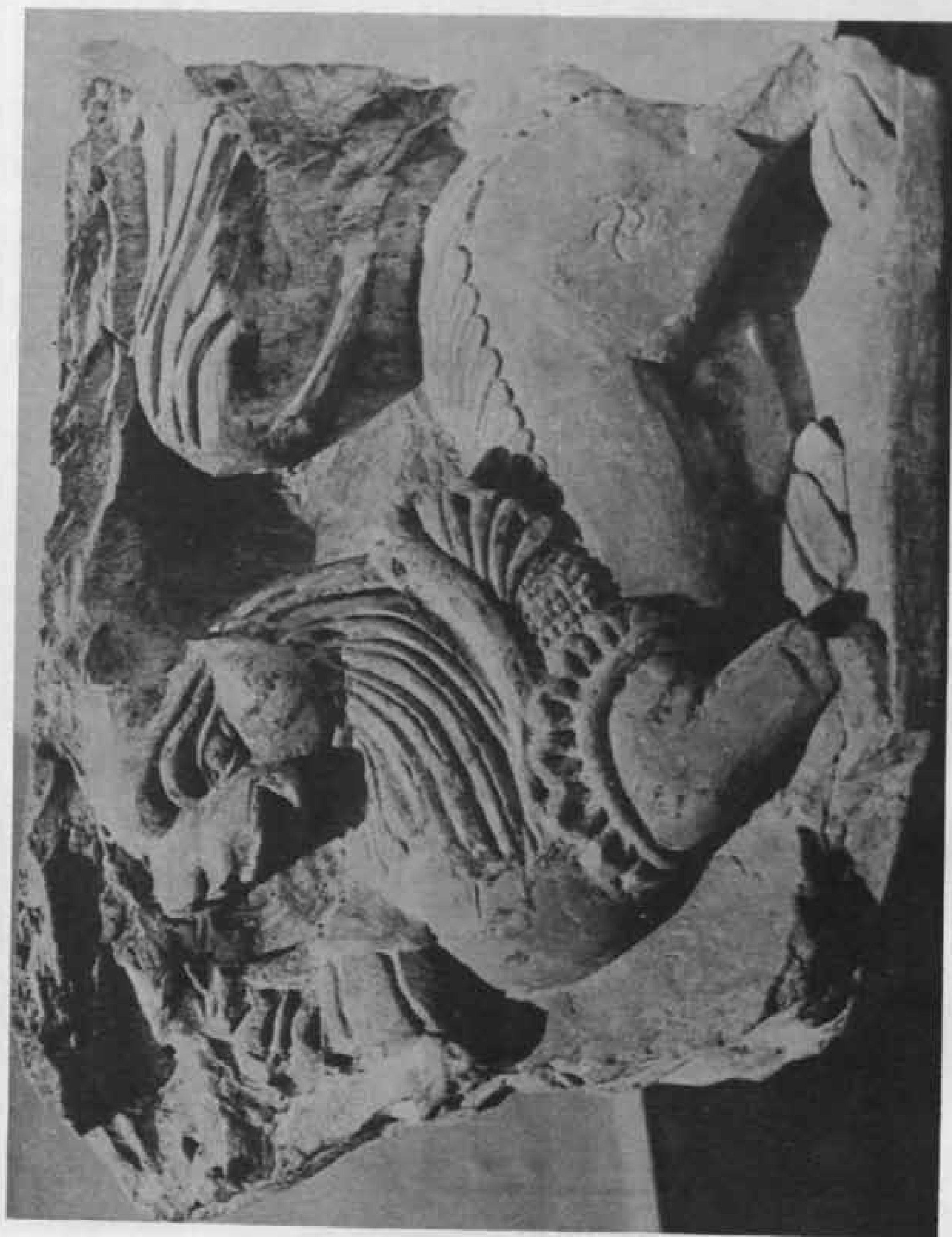








42. Narhan: plant remains. *See page 162*



43 Allahabad Museum: Brick panel from Rocky. *See page 176*



44. **Allahabad Museum: Head of Buddha.** ***See page 176***

MUSEUMS

1. Government Museum, Agartala.- The Museum, acquired thirty coins of Ahom rulers and one stone sculpture.

2. Government Museum, Ajmer.- During the year under review, the Museum received one sculpture from Kekari.

3. Allahabad Museum, Allahabad.- The Museum acquired ten terracotta objects and four stone sculptures. Important amongst them are one brick panel from Rocky (Pl. 43) and stone images of Mahishasurarnardini and Buddha is datable to the post-Gupta period from Kausambi (PI. 44).

4. Government Museum, Almora.- The Museum collection is enriched by the acquisition of sixteen stone sculptures, four terracottas, two paintings, three metal objects, one hundred and twenty-one coins, (including nine of gold,)one each of a wooden door-set and typical Kumaoni *Hukkha,* a few domestic objects and books from the collections of eminent scientist Boshi Sen. Noteworthy amongst them are the images of seated *Yaksha* and Siva-Parvati of about the third century AD; a metal mask of local divinity; one gold coin of Kanishka III; steatite figurine of Vishnu of about the eighth century AD; and painted manuscript showing the Jatayuvadha of Kishangarh school of Rajasthan .

5. Government Museum, Alwar.- The old showcases were given new shapes, and manu scripts and the painting sections reorganised.

6. Government Museum Amber.- The Museum collection has been enriched by the addition of one dozen sculptures and architectural fragments from Amber.

7. Government Museum, Bharatpur.- The galleries of the Museum were re-organised by replacing old pedestals and showcases.

8. Archaeological Museum, Bodhgaya.- The Gallery 2 of the Museum was rearranged and opened to the public.

9. Indian Museum, Calcutta.- The Museum, during the year under review, acquired through gift and purchase two images of Vishnu datable to the seventh and twelfth century AD from 24-Parganas and Hooghly districts respectively; nine coins from Government mint,

Bombay ; and two coins of the Sultan Iltutmish.

10. Bhuri Singh Museum, Chamba.— The Museum acquired twenty-nine stone sculptures and a few miniature paintings during the year under review.

11. Government Museum Chittaurgarh.— A few new showcases and wooden frames were provided to the exhibits.

12. Maharajadhiraja Lakshmishwar Singh Museum, Darbhanga.— The Museum, during the year under review, acquired one object each of the royal throne of *Maharajadhiraja* Rameshwar Singh of Darbhanga and a round table having legs made of rhinoceros.

13. Assam State Museum, Guwahati.— During the year under review, the Museum acquired two sculptures each of stone and bronze from Bijulibari near Sipajhar of District Darrang, one copper-plate of king Banamalabarmadeva of Salastambha dynasty from Dighali, District Nowgaon, besides organizing and arranging a few exhibitions and seminars.

14. Archaeological Museum, Halebid.— The Museum collection is further enriched by the acquisition of a stone sculpture of a male torso, portion of *Kakshasana* with dancers and drummers and a female *Chauri* bearer from the premises of Hoyasalesvara temple .Tri-lingual labels were also introduced.

15. Archaeological Museum, Hampi.— The facelifting of the galleries with suitable colours has been completed and lighting arrangements improved.

16. Government Museum, Hawa Mahal, Jaipur.— During the year under review, the Museum acquired royal stationary articles belonging to Mahkma Khas of the erstwhile Jaipur state.

17. Government Museum, Jaipur.— During the year under review, the Museum acquired three sculptures of the medieval period and forty-eight miniature paintings datable to eighteenth century.

18. Government Museum, Jhalawar.— Seventy-six sculptures were acquired from Kakuni during the year under review.

19. Government Museum, Jodhpur.— The Museum acquired six hundred and twenty-one silver and copper coins. Besides, a new showcase was prepared for the display of crocodile in Natural History section of the Museum.

20. Archaeological Museum, Kalibangan.— During the year under review, the Museum acquired seventy-five objects from the site. Noteworthy amongst them are a seal of composite

animal figures, pottery with Indus Script, terracotta humped bull (Pl. 45), inscribed *Chakla* (PI. 46), and a ram decorated with punched circlets. Besides, a temporary Gallery has been set up with the display of maps, drawings and photographs of the site.

21. Archaelogical Museum, Khajuraho.— During the year under review, all the antiquites have been accessioned and facelifting of the displayed exhibits completed by rearranging and re-modelling of showcases and pedestals.

22. Archaeological Museum, Konarak.— During the year under review, preparation of an ornamental gate has been taken up and new photographs on Orissan Monuments displayed. Some pedestals were re-done with sun-mica veneering.

23. State Museum, Lucknow.— The Museum, acquired one hundred and sixty-five objects including sculptures, terracottas, textiles and coins. Important amongst them included an image of Buddha, female head, bust of Kartikeya and an image of Hariti, all assignable to Kushana times.

24. Site Museum, Madan-Kamdev.— During the year under review, a temporary display shed was prepared for the exhibition of sculptures. The approach road to the site was developed.

25. Archaeological Museum, Fort St. George, Madras.- During the year under review, one each of bomb head and light mortar was acquired and displayed in Gallery 1 of the Museum Restoration, repairs and repainting of the wooden model of the fort was also taken up and completed. Four aqua-prints were also chemically treated and re-displayed in Gallery 7.

26. Government Museum, Madras.- The Museum, during the year under review, added sixty-nine bronzes through treasure treasure troves and ten stone sculptures through transfer, besides setting up a new Gallery on ‘Contemporary Art’.

27. Archaeological Museum, Mattancherry.- The layout of the galleries and display plan of the exhibits have been finalized.

28. Government Museum, Mathura.- During the year under review, the Museum acquired through gift and purchase three hundred objects inkling forty-nine sculptures and one inscribed pedestal, fifty-three terracottas, one hundred and forty-two gold, silver and copper coins thirty-four paintings, fourteen bronzes, two barrels for keeping, farmans, one object each of gangeefa, copper harpoon and textile. Two temporary exhibitions each on 'Selected Art pieces of Kushana Period' and 'Modem Painting,' were also arranged and organized

29. Archaeological Museum, Nagarjunakonda.— During the year under review, a photo graphic exhibition was organized at Anupu to high-light the site, besides repainting of galleries.

30. Central Museum, Nagpur.— During the year under review, the Museum loaned a few selected sculptures and bronzes for display in the Exhibitions organized by the Prince of Wales Museum, Bombay and National Gallery of Art, Washington. Steps were also taken to replace the pedestals by new wooden ones. Besides, the Museum objects acquired recently from the excavations were also chemically cleaned.

31. Archaeological Museum, Nalanda.— The reveneering of the pedestals of the main hall has been completed and a collapsible gate between the passage of Gallery 1 and 2 provided. The Bronze Gallery was opened for public view.

32. National Museum, New Delhi.— During the year under review, the Museum acqui red twenty bronzes, thirteen stone sculptures, seven carved pieces made of soapstone, assignable to the Maurya-Sunga period and ten terracottas. Important among the new acquisitions inc luded Chaturvimshati Patta of Rishabhanatha, datable to eleventh century, from Orissa; the crowned Buddha of the twelfth century from the Himalayan region; image of Ambika, eleven th century; Yab-Yum, seventeenth century, from Tibet; seated image of Buddha, datable to seventh-eighth century from Madhya Pradesh; standing Vishnu (Pala), eleventh century from Eastern India; head of a Bodhisattva, datable to second century AD from Mathura; and Varahi, fourteenth century from Gahadawala.

33. Archaeological Museum, Purana Qila, New Delhi.— During the year under review, the layout and plan of the display of the Museum exhibits in the cells were finalized.

34. Patna Museum, Patna.— During the year under review, the Museum acquired one object each of brass Tibetan *manichakra* and the model of a temple.

35. Archaeological Museum, Sarnath.— The work of reveneering of showcases and pedestals in Gallery 3 has been completed.

36. Tipu Sultan Museum, Srirangapatna.— The old coin showcase was replaced and a new case has been introduced having a new mirror screen to indicate both the obverse and reverse of the exhibits.

37. Government Museum, Udaipur.— During the year under review, the Museum acqui red five sculptures and three inscriptions.

38. Government Museum , Ahar, Udaipur.— The Museum collection has been enriched by the addition of fifty-one sculptures. Sixteen wooden pedestals were also prepared.

39. Archaeological Museum, Vaishali.— During the year under review, the Museum collection is further enriched by the addition of four terracotta and one stone objects.

40. Archaeological Museum, Velha Goa.— The Museum acquired thirty antiquities including a wooden idol, guns, swords, bronzes and a water spout depicting the cow and calf motif of the Kadamba period. Some of the exhibits have been displayed. The paintings of the Portuguese Governors were labelled chronologically. The wodden gate at the main entrance was strengthened.

ARCHITECTURAL SURVEY

Temple Survey .—The Temple Survey Project (Northern Region) of the Survey under B. L. Nagarch, surveyed the temples of the Paramaras of Malwa specially falling in the Districts of Bastar, Dewas, Dhar, Raipur, Raisen, Ujjain, Vidisha and West Nimar.

The Baijanath Mahadeva temple at Badnawar, District Ujjain, consists on plan a sanctum and *antarala* and has a *bhumija sikhara.* The Nagesvara Mahadeva temple also at Badnawar, consists on plan of a sanctum, an *antarala* and a *sabhamandapa.* The ceiling of its *sabhamandapa* consists of five bands of concentric circles and is decorated with *kola* and *gajatalu* courses. Its *pancharatha sikhara* is decorated with *urusringas* and *bhumi-amalakas.*

The Byamandal or Vijayjimandira at Vidisha)stands on a huge platform approached by a flight of steps. The Vijayamandira was built by the Paramaras in the twelfth century AD and was demolished later on and a mosque was built in its place. Its lofty *adhisthana* mouldings can still be seen on the southern side.

The Hindola Torana at Gyaraspur is an ornamented gateway of a large temple of Vishnu. While the temple has collapsed, this gateway has survived. Only the plinth of the temple can be seen now. The ten incarnations of Vishnu are depicted on the upright pillars of this *torana.* This Vishnu temple is assignable to twelfth century AD on the basis of epigraphical evidence. The Hindola torana is a beautiful specimen of Paramara art.

The remains of at least three temples of the Paramaras dedicated respectively to Brahma, Vishnu and Mahesa have been found at Balachvan in District Vidisha. Noteworthy among the remains are lintels of the sanctum doorways, door-jambs, *pithas,* mouldings of the *adhisthana, amalakas* and sculptures of *dikpalas,* Ardhanarisvara, Brahma, Brahmi, Varaha and Dasavatara Vishnu. *I*

The remains of a Siva temple and a number of other sculptures were noticed at Baro in District Vidisha. Notable among the sculptures are those of Uma-Mahesvara, and a fragmentary image of Vamana. There was also a Jaina temple at the site as is evident from an image of the seated Adinatha. These are assignable to the tenth century AD. An image of Kamadeva with his consorts belonging to the tenth century AD and now kept in the Vidisha Museum, is also a noteworthy discovery.

The Siva temple at Bhojpur, District Raisen, consists on plan of a sanctum only. The ceiling of the sanctum rests on four massive pillars and a number of pilasters. It enshrines a polished Siva-linga installed on a *yonipatta.* It has a high doorway which is carved with the figures of river goddesses, female attendants and Kubera. The temple is ascribed to the reign of the Paramara King Bhoja (AD 1000-1055). At a distance of about half-a-kilometre to the east of the Siva temple stands an ancient Jaina temple which consists on plan a sanctum and an *antarala* and enshrines a colossal image of the standing Santinatha flanked on the right by

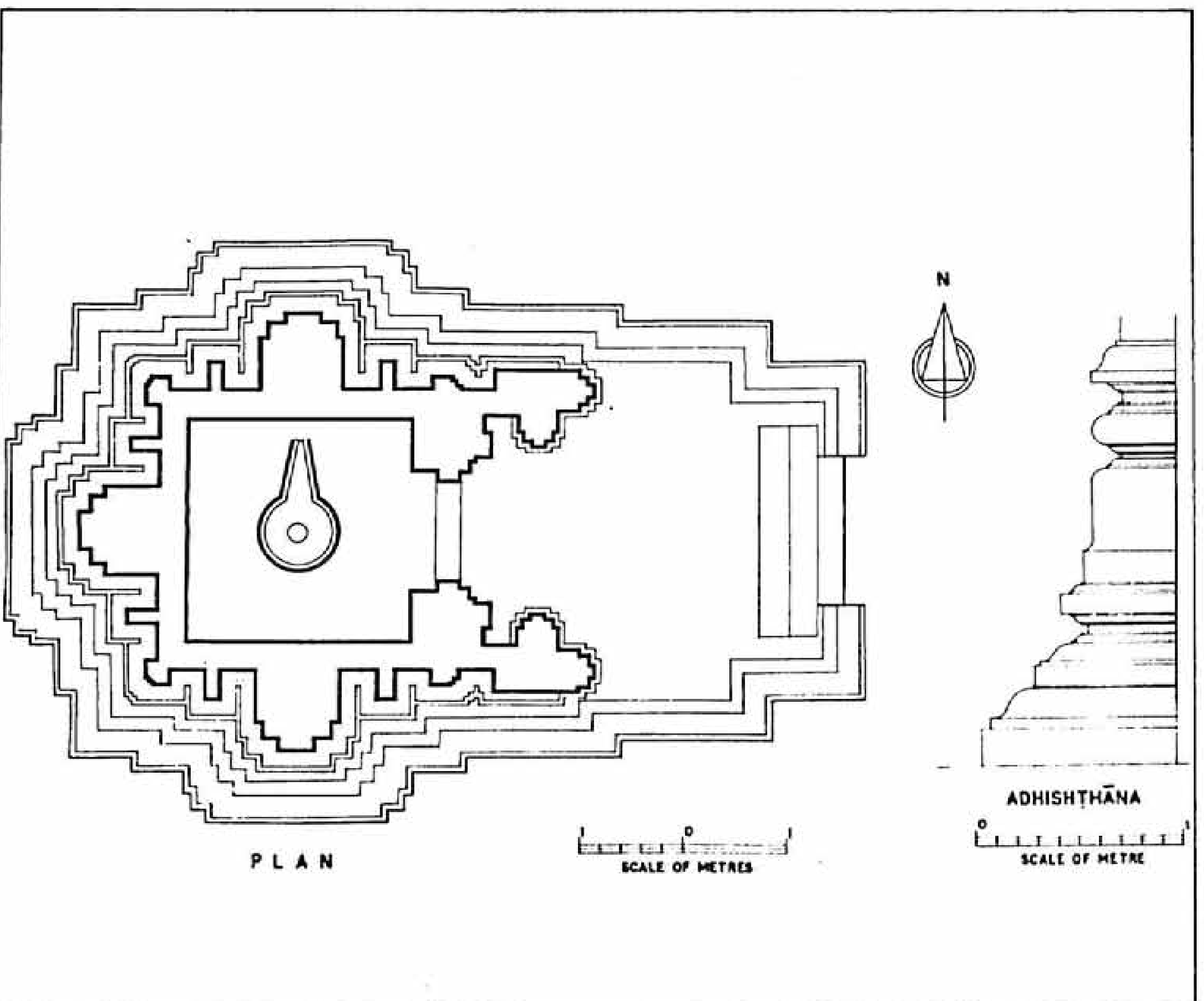


Fig. 11. Jamli: Mahadeva temple. *See page 183.*

Parsvanatha and on the left by Suparsvanatha. The pedestal of the image of Santinatha bears an inscription which records that it was built during the reign of Bhojadeva. Another inscription on the pedestal of the image of Suparsvanatha records that the image was installed during the reign of Paramara king Naravarman (AD 1074-1133).

Only the *mandapa* of Vishnu temple at Ashapuri has survived. The pillars of the *mandapa* are highly ornamented with *kirtimukhas* and vase-and-foliage. At Bhilota, located on the north of the village Ashapuri, are lying the ruins of at least four temples but the plinth of only one temple is *in situ.* From the sculpture of Siva carved on the *kumbha* moulding of this temple it is evident that it was dedicated to Siva. The other temples at Bhilota were probably dedicated to Surya, Vishnu and Lakulisa. The existence of a Surya shrine at the site is proved by a lintel of the sanctum doorway which depicts a seated Surya carved on the *lalata-bimba* (Pl. 47). The Bhutanatha temple at Ashapuri was a Siva temple as is evident from the sculptural ruins lying at the site. Noteworthy among the ruins are images of the seated Uma-Mahesvara, dancing Saptamatrikas and the seated Ganesa. The temple of Ashadevi is in ruins. However, its elaborately carved sanctum doorway is *in situ* and is decorated with seven *sakha,* The temple was dedicated to Mahishamardini-Durga. Satamasiya is the site of the Jaina temples at Ashapuri. A colossal image of a Jaina *tirthankara* is still lying at the site.

Bhojasala at Dhar was originally a temple of goddess Sarasvati. It was built by king Bhoja in the eleventh century AD. On the western and northern sides of Bhojasala are still seen the traces of the original *adhisthana* mouldings of the temple.

The Mahadeva temple at Jamli consists^ on plan of a *pancharatha* sanctum, an *antarala* and a *mandapa~(Fig.* 11). It is surmounted by a *bhumija sikhara* (PI. 48).Its *jangha* is divided into two segments by a plain band and is decorated with a niche containing an image of a deity on *bhadra.* This is the only temple of *bhumija* style which is not stellate on plan. The temple is assignable to the later half of eleventh century AD.

The group of temples at Un, consisting of nine temples, is contemporary with the Udayesvara temple at Udaipur, District yidisha. This is evidenced by an inscription of Paramara king Udayaditya found in Chaubara Dera no. I, which is the largest and most elaborately carved temple at the site. It is the only *panchayatana* temple and consists on plan of a sanctum, an *antarala,* a pillared *mahamandapa, mandapa* having lateral transepts and an *ardhamandapa* in front. The sanctum-doorway is beautifully carved with *saptasakhas.* Out of four subsidiary shrines, only the shrine on the north-western comer has survived.

The Mahakalesyara__temple at Un is located to the north of Chaubara Dera no. I and consists on plan of a sanctum, an *antarala* and a *sabhamandapa* (PI. 49). The sanctum-doorway is embellished with seven *sakhas* and the sanctum enshrines a *Siva-linga.* The *jangha* is decorated with a niche on the *bhadra* of the sanctum and with pilasters on the remaining portion. The niches on the *bhadra* of the sanctum contain images of Andhakantaka Siva, Nataraja and Chamunda.

The Nilakanthesvara Mahadeva temple stands in the heart of the village Un and consists on plan of a sanctum, *an antarala* and a *sabhamandapa.* The temple stands on a platform measuring 1.35 m high. The *jangha* of the temple is decorated with pilasters. The *sikhara* of the

temple is on *bhumija* style (PI. 50) and shows four spines decorated with chaitya-arches on the central *rathas.* The northern, eastern and southern *bhadras* of the sanctum show respectively the images of the dancing Chamunda, Nataraja and Andhakantaka Siva. The sanctum doorway is of *saptasakhas,* all of which are plain except the third which is a *rupa-stambha* and is decorated with vase-and-foliage design.

Chaubara Dera no. II is a Jaina temple and consists on plan of a sanctum, an *antarala,* a *mahamandapa,* a *mandapa* and an *ardhamandapa* (PI. 51). Its *mandapa* has four doors. The temple stands on a spacious platform. As per the inscription on the pedestal of an image of Santinatha, the temple has been dated in Samvat 1242 (AD 1185). Its *jangha* is decorated with a single band of sculptures. The sanctum-doorway has only five *sakhas* instead of seven.

Mahakalesvara temple no. II stands on the east of village Un on the bank of river Narayani. It consists on plan of a *pancharatha* sanctum, an *antarala* and a *mandapa.* The niches on the northern, eastern and southern *bhadras* of the sanctum contain images of dancing Chamunda, Siva and Andhakantaka Siva respectively. The *sikhara* above the sanctum, is of *bhumija* style. The temple shows a prominent *sukhanasika* on each side at the base of the spines and exhibits a sculptured medallion with a conspicuous *chaity a-* dormer. Its sanctum-doorway is decorated with five *sakhas.* The ceiling of the sanctum is a *nabhichchanda vitana.*

Ballalesvara Mahadeva temple is located to the west of the village Un and consists on plan of a sanctum, an *antarala,* a *mahamandapa* and an *ardhamandapa.* Only the plinths of the *ardhamandapa* and *mahamandapa* have survived. The sanctum-doorway is embellished with seven *sakhas.* The *jangha* is decorated with a single band of sculptures on the *bhadra* and *kamarathas* of the sanctum. The recesses of the *jangha* are embellished with rectangular pilasters surmounted by a shrine-motif. While the niche on the southern *bhadra* of the *jangha* of the sanctum, which contained an image of Andhakantaka Siva, is missing, the niches on the western and northern *bhadras* contain images of the dancing Siva and Chamunda respectively.

The Goalesvara Mahadeva temple is located close to the Nilakanthesvara temple. It consists on plan of a sanctum, an *antarala* and a *mandapa.* Its *mandapa* has been completely lost. The sanctum enshrines a Siva-linga. The doorway of the sanctum has three *sakhas.* The level of the floor of the sanctum is 1.10 m below the ground level.

Onkaresvara Mahadeva temple is located on the north-east of village Un. It consists on plan of a sanctum, an *antarala,* a *mahamandapa* and an *ardha-mandapa.* The sanctum enshrines a *Siva-linga.* The ceiling of the sanctum is of *nabhichchanda* variety. The temple is dedicated to Siva.

The Goalesvara temple consists on plan of a sanctum, an *antarala,* a *sabhamandapa* and an *ardhamandapa.* It is a Jaina temple and faces north. The sanctum enshrines three images of Jaina *tirthankaras.* The central image is that of Santinatha flanked on the right by Kunthunatha and on the left by Arahanatha. The floor level of the sanctum is lower than the level of the floor of *antarala* and is reached by a flight of seven descending steps. The doorway of the sanctum consists of three *sakhas* which are plain except for the decoration of *chaitya-arches* and *tamalapatras.* A seated Jina is carved on the *lalatabimba.* The ceiling of the *sabhamandapa* is of *nabhichchanda* variety while the ceiling of the sanctum is

flat and plain. The *sabhamandapa* has three *ardhamandapas* attached to it, one each on the northern, eastern and western sides. The temple stands on a spacious platform measuring 1.10 m high. The *jangha* of the temple is decorated with two median bands of which one is carved with *chaitya-arches* while the other is decorated with *tamalapatras*. The *sikhara* above the sanctum is in *bhumija* style. The temple is assignable to the eleventh century AD.

The Siddhesvara Mahadeva temple at Nemawar, District Dewas is dedicated to Siva. It consists on plan of a sanctum, an *antarala,* a *mahamandapa* with three *ardhamandapas,* one each on the southern and northern sides and one on the west. The sanctum and the *antarala* of this temple were constructed earlier and the *mahamandapa* and *ardhamandapas* were added to it a century later. This is evident from the difference in the styles of carvings and ornamentation. The *sikhara* of this temple is of *bhumija* style and is most attractive. It is loftier than the Udayesvara Mahadeva temple at Udaipur, District Vidisha. It has as many as nine vertical rows of miniature shrine-models. It is a *navamalika prasada.* However, the temple represents a degenerated phase of the style and is assignable to the twelfth century AD. The ceiling of its *mahamandapa* is of the *nabhichchanda* variety and is decorated with *kola* and *gajatalu* courses. At the bottom of the ceiling are carved sixteen *bhuta-brackets* each of which supports an *apsaras, The apsarasas,* are standing in different postures under a mango tree. The doorway of the sanctum is decorated with seven *sakhas.* On the lintel of the sanctum doorway are depicted the seated Virabhadra, Saptamatrikas and Ganesa. The sanctum enshrines a *Siva-linga*. The *jangha* of the temple is carved with a single band of sculptures showing deities inside the niches and *apsarasas* in the recesses.

The Vishnu temple at Nemawar is located on a high mound to the northern side of Siddhanatha temple. It faces east. The temple consists on plan of a sanctum and an *antarala* and was left incomplete (Pl. 52). The doorway of the sanctum consists of seven *sakhas*. On the lintel of the sanctum doorway are carved images of Saptamatrikas and Ganesa. A niche above the doorway of the sanctum contains an image of seated Sarasvati. The *jangha* of the temple is carved with a single band of sculptures showing *apsarasas, dikpalas,* various forms of Vishnu and other deities (Pl. 53).

On the western outskirts of Nemawar was discovered a Siva temple locally known as Akadvan. Only the sanctum of the temple has survived. The sanctum of the temple has three *sakhas.* This is also a Paramara temple and is assignable to the eleventh century AD.

The Bhand Deul temple at Arang, District Raipur stands on a platform 1.05m high and consists on plan of a stellate sanctum with six offsets and an *antarala* (PI. 54). The *mandapa* and *ardhamandapa* in front of the temple have been lost, It is a Jaina temple and the sanctum enshrines three colossal images of the *tirthankaras,* the central image being that of Santinatha flanked on the right by Neminatha and on the left by Sreyamsanatha. The ceiling of the sanctum is that of *nabhichchanda* variety. The original doorway of the sanctum has been fully lost. The temple is a beautiful specimen of *bhumija* style in the Chhatisgarh region. The sanctum is *pancharatha* on plan.

The Battisa temple at Barsur in District Bastar is dedicated to Siva and faces east. In fact these are two temples side by side, both of which are known as the Battisa temple. Each

of these temples consists on plan of a sanctum, an *antarala* and a *mandapa.* The ceilings of the sanctum, the *antarala* and *mandapa* are flat. Both of these temples are in a dilapidated condition.

The Devarla Temple consists on plan of a sanctum, an *antarala* and a *mandapa.* The sanctum enshrines a *Siva-linga* and has a flat ceiling which is decorated with a full-blown lotus. Four armed standing Hari-hara has been carved on the *lalata-bimba.* The *jangha* of the temple is decorated with three bands of sculptures of gods and goddesses and apsarasas. Only the southern wall of the sanctum is *in situ.* Its western and northern walls have collapsed. The Temple faces east. The *sikhara* above the sanctum has collapsed. The temple was built by Chhindaka Nagas and is assignable to the twelfth century AD.

The Narayana temple at Narayanapal in District Bastar consists on plan of a sanctum, an *antarala,* a *gudhamandapa* and an *ardhamandapa.* It stands on a spacious platform and faces east. Its *jangha* is divided into two compartments by a median band carved with lotus-scrolls. The sanctum is *saptaratha* on plan and is decorated with two niches, one above the other, on each of its *bhadras.* These niches are now lying vacant at present. The *jangha* is plain except for the decoration of rectangular pilasters on projections and in recesses. The *saptaratha sikhara* above its sanctum is decorated with *chaitya-gavakshas.* The doorway of the sanctum is carved with three *sakhas.* Four-armed Ganesa is carved on the *lalata-bimba.* The sanctum enshrines an image of four-armed Vishnu standing on a pedestal. The temple was built by the Chhindaka Nagas of Bastar in the twelfth century AD.

Building Survey.- In continuation of last year's work *(1983-84,* pp. 188-192) the Building Survey Project of the Survey, under the direction of W.H. Siddiqui, assisted by J.B. Chand, C.P. Satsangi, Sudhir Kumar, S.K. Arora and Madan Mohan continued the architectural Survey of secular buildings of various nature in Delhi, Haryana, Maharashtra, Rajasthan, Uttar Pradesh and West Bengal.

DELHI

A good number of secular buildings including Mughal *havelis* were inspected in ancient localities of Delhi and the walled city of Shahjahanabad. The only secular building ascribable to the time of Sultan Ghiyathu'd-Din Balban was built on a temple plan in the locality earlier called Ghiyathpur after its founder and now known as Basti Nizamud-Din. The building is now known as Lai Mahal because of red sandstone facing. Built on a raised platform its comer structures are gone except the central domed building supported on dressed stone pillars and balanced with square *chhatris.* The shape of the dome with *amalaka* and finial is of indigenous style. It is badly altered and repaired by its modem occupant Hakim Sayyid Hasan. The old house of Sayyid Hasan Sani Nizami near Khwaja Hall having arched Diwan Khana, verandahs, fluted pillars and ornamented ceilings is a later Mughal building. The adjacent house to the tomb of Atgah Khan has similar architectural features.

The survey of the fourteenth century Tughluq house at Jahan Panah in Sarai-Shahji *(See*

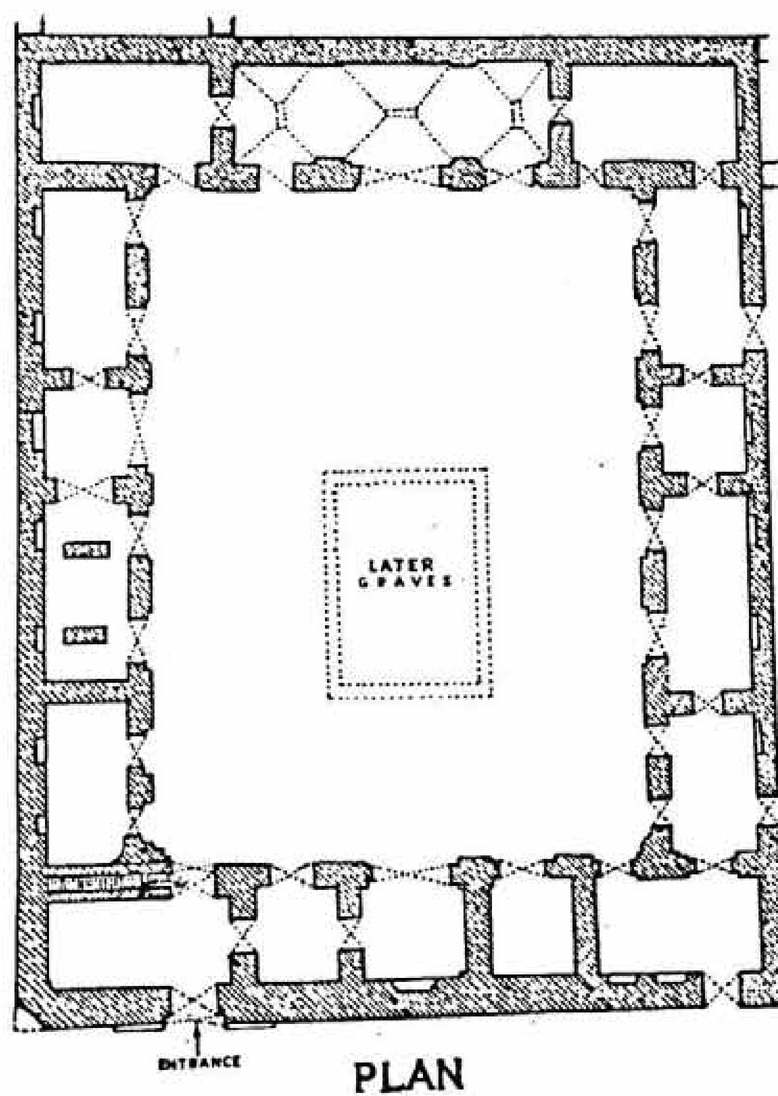


Fig. 12. New Delhi: Plan of the house in Sarai Shahji. *See page 188.*

1981-82,p.lll) has been completed and its ground plan prepared (Fig. 12). Built on a rectangular plan it has a *deorhi,* ten rectangular halls and five square rooms with vaulted roofs of Tughluq variety. The walls were covered with fine lime plaster with stucco ornamentation which is still partly extant in the room of the first floor which is attached to a square tower as found in the medieval houses of Middle East countries. The elaborate Tughluq building known as Malcha-Mahal was examined in details. Built in rubble lime masonry with pointed arches, it measures 30 m x 27.5 m and consists of three main bays, each bay is a little larger than the others. The roof of the building is flat and is reached by means of five staircases, while the ceiling of every apartment is vaulted. Some 45 m to the south of the palace there is a *bund* into which, according to the contemporary historian Shams Siraj 'Alif, .the emperor Firuz Shah threw a quantity of zamzam. The building was evidently a pleasure pavilion or a *shikar-gah* on the tank.

The outstanding find of archaeological interest is the terrace garden remains of pre-Mughal period at Vasant Vihar. On careful examination it was found that the garden stretched from west to east at the foot of the rectangular double storeyed pavilion, erected over a raised platform and crowned by an octagonal *chhatri* (Pl. 55). There are three low terraces with masonry water channel running north-south nearly 1.50m high from the surrounding land. The pavilion has three pointed arched entrances, having tapering solid engaged minarets at the comers. The outer and inner surfaces of the walls were covered with a fine white lime plaster of the Tughluqian variety. Besides, there is evidence to show that the parapet walls and the octagonal domed *chhatri* were originally embellished with blue square tiles, some of which still exist. The southern portion of the garden had a very impressive, deep circular well, having deep depressions on the sides of the platform indicating that the water was .drawn from the spots and channelized through attached cisterns. Unlike the Mughal overhead tank system, the water was directly channelized for irrigation. There is a small mosque near the masonry water channel, whose architectural features and stucco ornamentation is of Tughluq style. The collapsed circular well (step-well ?), whose diameter on the top being approximately 7m, was faced with fine ashlars inside and was connected with masonry cisterns and water channel whose remains are still extant.

Extensive remains of later Mughal houses were observed in the fortified area of Tughluqabad. Built in rubbles the walls and ceilings were covered with fine white lime plaster of Mughal variety. The cusped-arches, pillars and niches are similar to those of the houses still in use in Shahjahanabad. A ruined small bridge of *lakhauri* bricks over a *nullah* at Garhi near Lajpat Nagar is remarkable for its bilingual inscription in Nagari and Persian in elegant *Nastaliq* characters which records that during the reign of Abu-Zafar Siraju'd-Din Bahadur Shah Badshah, Mukund Lai Misr, son of Diwan Singh, son of Kishan Chand Misr of the Pathak community, old resident of Jamalpur Tuhana, presently living in Delhi, constructed the bridge for saving the people from floodwater on 1st Rajab, AH 1273, Regnal year 21 (25 Feburary, 1857). It is historically interesting to note that the builder of the bridge Mukund Lai was *Amin-in-kul sarkar-i-shahi* of the last Mughal emperor Bahadur Shah (1837-57) and the bridge was erected only two-and-a-half months earlier than the great revolt of 1857.

A ruined *haveli* in Gali Wakil Wali in Shahjahanabad area is nearly three hundred years old. Built in *lakhauri* bricks and lime mortar it has four arched entrance gates, similar in design to that of the southern gate of Jami Masjid. It has a basement storey with a masonry channel for letting air into it. The impressive entrance gate called Punjabiyan Phatak, was the part of the *haveli* of Husamud'd-Din Haidar, a later Mughal nobleman, resident of Lucknow. Built in *lakhauri* bricks the structure has well-known architectural features. On Charkhewal street lies the commercial primary school building which was evidently a double storeyed *haveli* in *lakhauri* bricks with *deorhi, sahn,* Diwan Khana supported on ornamented stone pillars, testify to its original glory.

The well-known Phatak Habash Khan, now known as Tilak Bazar, consists of three arches, covered with flat roof, has red sandstone facing in the lower portion. The gate of the *haveli* of Nawwab Wazir is now known as Katra Ghee. Its architectural features are very similar to the entrance gate of the tomb of Safdarjang. The imposing gate of the Kanodia Dharmshala is richly ornamented with colourful floral designs. Both sides of the gate are double storeyed, now occupied by shopkeepers. The inner portion of the Dharmshala is now used as a godown. It is more than hundred and fifty years old. The building of Thakur Dharamshala is in Indo-European style.

HARYANA

In the village Hodal, District Faridabad, an impressive *haveli,* garden, masonry tank and *chhatris* were noticed. A three-storeyed residential building popularly called Mahal was surve-yed. It is a haveli -cum-garden complex. Built on a rectangular raised platform, it is approachable from the north through a flight of steps. The *deorhi* and *baithak* in *lakhauri* bricks have multifoil arched openings supported on fluted pillars and pilasters of Shahjahani variety. The flat roof covered with rectangular sandstone slabs rests on projecting cornices. It is now partly extant with its courtyard, pillared verandahs, Diwan-Khana with lofty arched openings of grey sandstone in conventional Mughal pattern, having two bay deep rectangular halls. The middle and outer ones are supported on double sets of pillars of Shahjahani style with cusped arches. The sides are notable for the *sihdaris* of multifoil arches which is commonly found in the Mughal *have Us* of Shahjahanabad and Lucknow. The southern wall has seven deep niches quoted with fine lime plaster and the central one is decorated with double faced fish or *makara* design, a notable feature of stucco ornamentation in later Mughal buildings of seventeenth and eighteenth centuries as is noticed in the gate house of Safdarjang tomb in New Delhi. The *haveli* was built in the middle of a finely laid out Mughal garden, whose remains of boundary walls, well, cisterns, water channels and fountains are still extant. Another striking feature is the waterwork arrangement which has a deep and wide brick channel with arched opening at rectangular intervals to control the water supply from the tank. The major portion of the channel and sluice arrangement is still extant and its functioning can be reconstructed in detail. The eight meter deep and huge masonry tank is very impressive for its embankment with solid side walls having octagonal open bastions, strengthening the hydraulic construction

below. The *haveli,* garden, tank and *chhatris* are said to have been built by Suraj Mai Jat of Bharatpur (1756-63), for his *Rani* who hailed from Hodal. To the same period seems to belong the *chhatri* locally called *sati sthana.* It has become famous as the local tradition relates that the *Rani* committed *sati* at this spot after the defeat and death of Raja Suraj Mai.

MAHARASHTRA

The domestic architecture of the localities of Nasik City is notable for the combination of brick and timber construction and omamention which follows the general pattern of Gujarati houses of the eighteenth and nineteenth centuries. A striking example of this style is represented by the House no. 2145 of Bhali Rain at Nai Darwaza Lane. This double-storeyed structure is remarkable for its profusely ornamental wooden facade. The entire structure has been erected on square wooden pillars, pilasters with trefoil arched openings, having carved scrolls and a figure of parrots, on beams and wooden rackets supporting the projecting *chhajjas* and *jharukha* windows, embellished with fine carvings of floral and arabesque pattern. In the same locality is another house, now three-storeyed, the top one being a later addition. Its ground floor has undergone alteration with the provision of shops. But its first floor has been raised on wooden projecting brackets, beams with carvings and double sets of foliated pillars with framed arches of cusped variety, having lotus buds at the ends of *kanguras.* Another dilapidated old double storeyed house at Priduara Pet was found to be of special interest in as much as it represented the ancient architectural trabeate pattern of construction. It is built on a raised platform whose frontal verandah is raised on lofty square wooden pillars, foliated brackets, supporting the sloping *chhajjas.* The projecting verandah of the first floor is supported on fluted shafts with rope design at its base and the top having flower petal design. The ornamental wooden capitals are of unique design, having a foliated elephant trunk whose end is surmounted by flowers.

RAJASTHAN

A good numbers of *havelis, madrasas* and other secular buildings were surveyed in Tonk city. The *haveli* of Mukhtarud-Daula Mahmud Khan is an elegant building, bearing beautiful inscriptions which testify to the keen interest of its builders in physical sciences. To the same period belong the Moti Bagh Madrasa, Nausha Miyam-ka-pul (Bridge) and his house which is popularly known as Khajurwali *haveli.* Maulvi Abdul Hamid popularly called Nausha Miyam' was a renowned scholar of Islamic studies and an excellent calligrapher of his time. The *haveli* of Nawab Muhammad Ali Khan (1865-67) is situated in Mohalla Rajban. Built in stone it has elegant decoration.

The most impressive secular building in Tonk is the Nawab's *Baradari* also known as Sunahri-kothi because of its profuse interior and exterior decoration in gold (Pis. 56 and 57). It was built by Nawwab Wazirud-Daula, second ruler of Tonk (1834-64). This double storeyed pavilion is surrounded by open arched galleries supported on Shahjahani pillars of grey

sandstone embellished with blue, green and yellow colours. The inner apartment of the first floor is divided into four bay deep halls, supported on foliated Shahjahani pillars with cusped arches, covered with delicately painted glasses in gold with floral designs. The western side has a *shahnashin* with wreath arch, inlaid with semi-precious stones. The eastern bay is remarkable for a wide *kamani* or arch supporting its ceiling, embellished with colourful *gul-dastas*. The lower shafts of the pillars are also decorated with artistic panels. The entire ceiling is so colourfully ornamented with paintings in gold that it is a rare specimen of Indo-Islamic art. The flooring is also executed in fine Mughal plaster with carpet design in black with pink surface. The rectangular panels of the dado are decorated with coloured borders and beautiful medallions in gold and *petra dura* work of semi-precious stones and coloured glasses. The ceilings of the arcaded gallery is in wood, painted in light green with white borders. There are paintings on the walls showing the outlines of the doors and windows with shutters which is comparable to the Nawabi buildings of Avadh.

UTTAR PRADESH

At Agra, the building remains of Mumtazabad now Tajganj, a locality designed and built for the artisans who were employed by Shahjahan for constructing the Taj Mahal, were examined. The lofty gateway, compound walls, *katra* (enclosed market) and houses were noticed. The gateway of *katra* 'Umar Khan' is very impressive having a deep multifoil arched opening of Shahjahani style with side rooms for the guards. A double storeyed house, now occupied by Hashim Ali, seems to have been the residence of the Superintendent of the market Its fine *lakhauri* brick masonry, white lime plaster and low Bangala vault of the rooms are remnants of the seventeenth century construction. A large hall now enclosed with modem construction of Dholpur House, occupied by Watal of Kailash carpet, is apparently of the time of Jahangir as is evidenced from the brickwork, plaster, colour mosaic and carved panels depicting the *surahi* (jar) and *jam* (goblet) designs in bas-relief in red sandstone. To the same period belongs another double storeyed structure standing in a compound near Sikandara. It shares the architectural features and decoration of Kanch Mahal, standing near the mausoleum of Akbar. The fine brick masonry, with lime mortar and veneering of red sandstone slab with inlay work of marble and other semi-precious stones has similar ornamentation as on the gate of the tomb of Itimadud-Daula.

A later Mughal *haveli* attached to 'Aza Khana in Mohalla Shahganj, is notable for its lofty arched gateway, deep *deorhi* and spacious Diwan Khana, now housing a valuable library of Arabic and Persian Manuscripts of the Mughal period.

In Lucknow City the double storeyed shops-cum-residence on both sides of chowk were documented. Besides the historic buildings of hospitals called Shahi Dawa Khana and Darush-Shafa, situated at Victoria street and Chowk respectively founded by Nasirud-Din-Haidar, King of Avadh (1827-1837) were also noticed. Their lofty entrance gate of multi-foil arches spacious halls and rooms, in *lakhauri* bricks, covered with a thick coat of plaster, having araish stuccowork of Avadh variety were also noticed. A double storeyed *haveli* in Mohalla

Shahganj built by Abdul Hakim Tambaku Wale, now occupied by Ahmad Adil and Kaniz Fatima , is remarkable for its complete plan and architectural setting of *Nawabi havelis* of Lucknow. It is built in brick on a raised rectangular plinth and approached by stone steps from the single entrance gate on the eastern side. The multi-foil arched opening provided with thick tall wooden doors is flanked by guard seats. It has a deep rectangular *deorhi,* having a door opening in the guest room, on the south, staircase and lavatory block on the north and a side door in the south opening into a spacious hall with an arched opening in the west, supported on thick and tall masonry pillars and pilasters, having stucco ornamentation of floral pattern. The square courtyard is surrounded by *sahanchis* of multifoil arched openings and *sihdaris* connected with the Diwan Khana and square rooms on both sides. The western side of the Diwan Khana is connected with a large rectangular hall, having windows in the western wall. The concrete flat roofs are supported by tall and thick square wooden beams and it has rafters, painted in green and blue colours, resting on the projecting brick cornices. The upper floor has six rectangular halls and two square rooms at the comers with *jharukha* windows. The arches and the spandrils are elegantly ornamented with *guldastas* in plaster relief and painted in pink.

In Moradabad city a notable building of a Mughal court, designated as *Darul-Adalat* (place of justice) was noticed near Shahi Jami mosque. The impressive three storeyed gateway has recessed multifoil arched opening with projecting *jharukha* windows of the later Mughal pattern. The top floor has a tri-arched opening in the centre and wreath-arched windows on the sides, having stone sheds, supported on stone brackets and crowned by a beautiful row of open arches. Built in *lakhauri* bricks and covered with white plaster, it is now used as the Office of the Baitul-Mal Imdadi Society, Moradabad, for helping poor Muslims. It has a large courtyard and a *haveli* with Diwan Khana of the judge or *Qazi* of that period. These apartments still contain wooden false ceilings with colour paintings and ornamentation in tiny mirrors and stucco designs.

Several ruined buildings of historical association and *havelis* of the local merchants in Baniyon-ka Mohalla in the small town of Baghra, District Muzaffar Nagar were noticed. The *haveli* of Lala Uggarsen in moulded bricks with terracotta ornamentation was found to be of architectural interest. Its multifoil arched entrance gate and projecting balconies, supported on ornamental stone brackets add elegance to the structure. A triple storeyed house of Sita Ram in the same locality is also noteworthy.

WEST BENGAL

The lofty tri-arched gateway (Tri-polia) at Murshidabad is remarkable for its imposing structures. lt is a double storeyed rectangular structure in brick, covered with white lime plaster The gallery at the top may have been used as *Naubat-khana* for beating drums at appointed hours as per tradition. Its parapet walls and solid domed turrets at the comer are balancing elements of the structure. The central portion has a projecting shed of corrugated iron sheets, supported on wooden frames and pillars. The Nawabi *haramasara,* known as the Begum

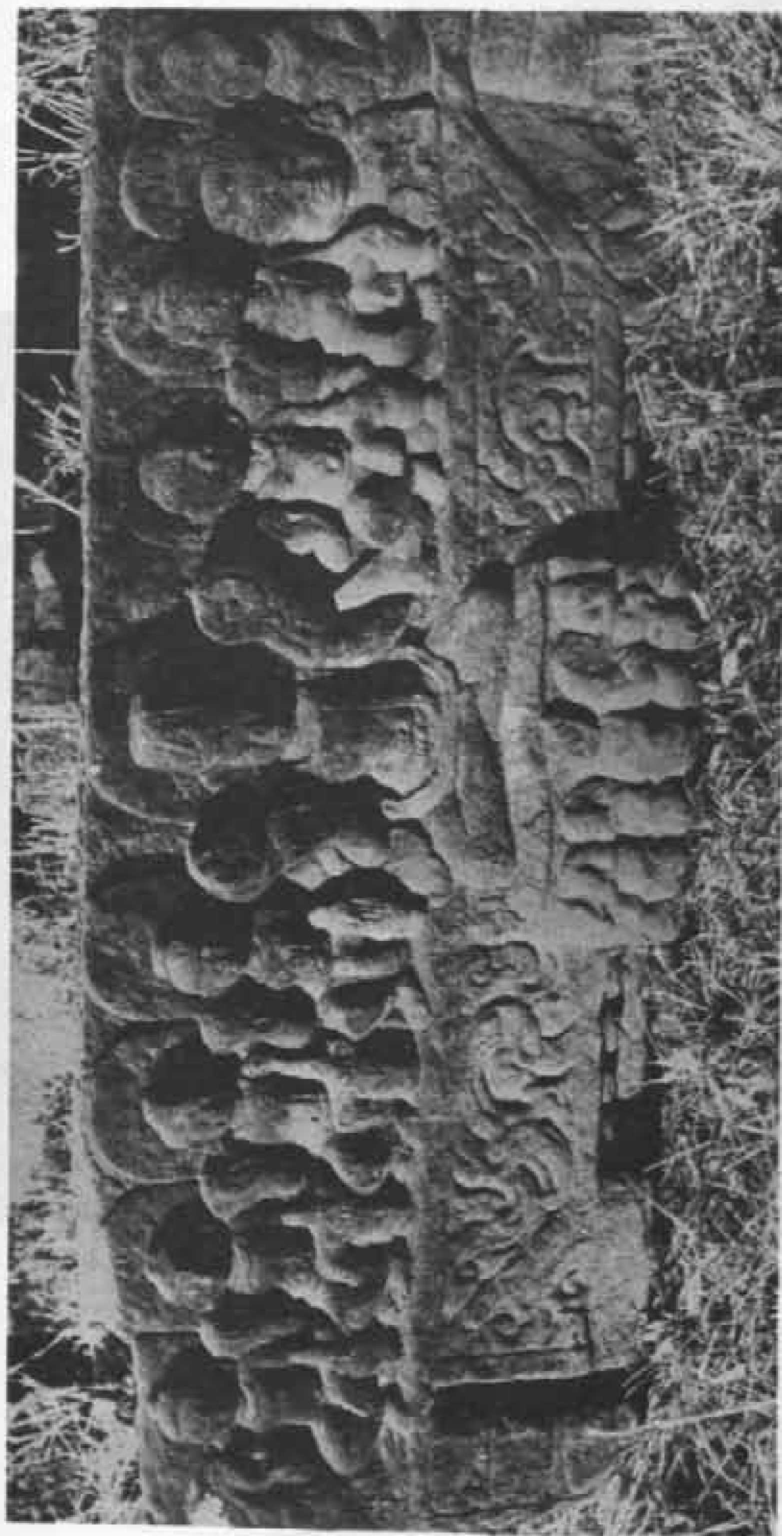
Palace situated at the river bank is remarkable for its Indo-European architectural designs in the form of tall circular pillars and projecting engaged bastions of the curvilinear facade with parapet of attractive floral design of the first floor and the engaged towers at the comers with European designs. Another notable secular building is the Nawabi stable of horses and elephants situated in the heart of the market. It has a lofty entrance gate on the south side with a spacious open court surrounded by two bay deep colonnades, supported on tall circular brick pillars covered with plaster and with flat roofs of lime concrete, wooden beams and rafters. It is now being used by shopkeepers.



45. Archaeological Museum, Kalibangan: Terracotta humped bull. *See page 178*



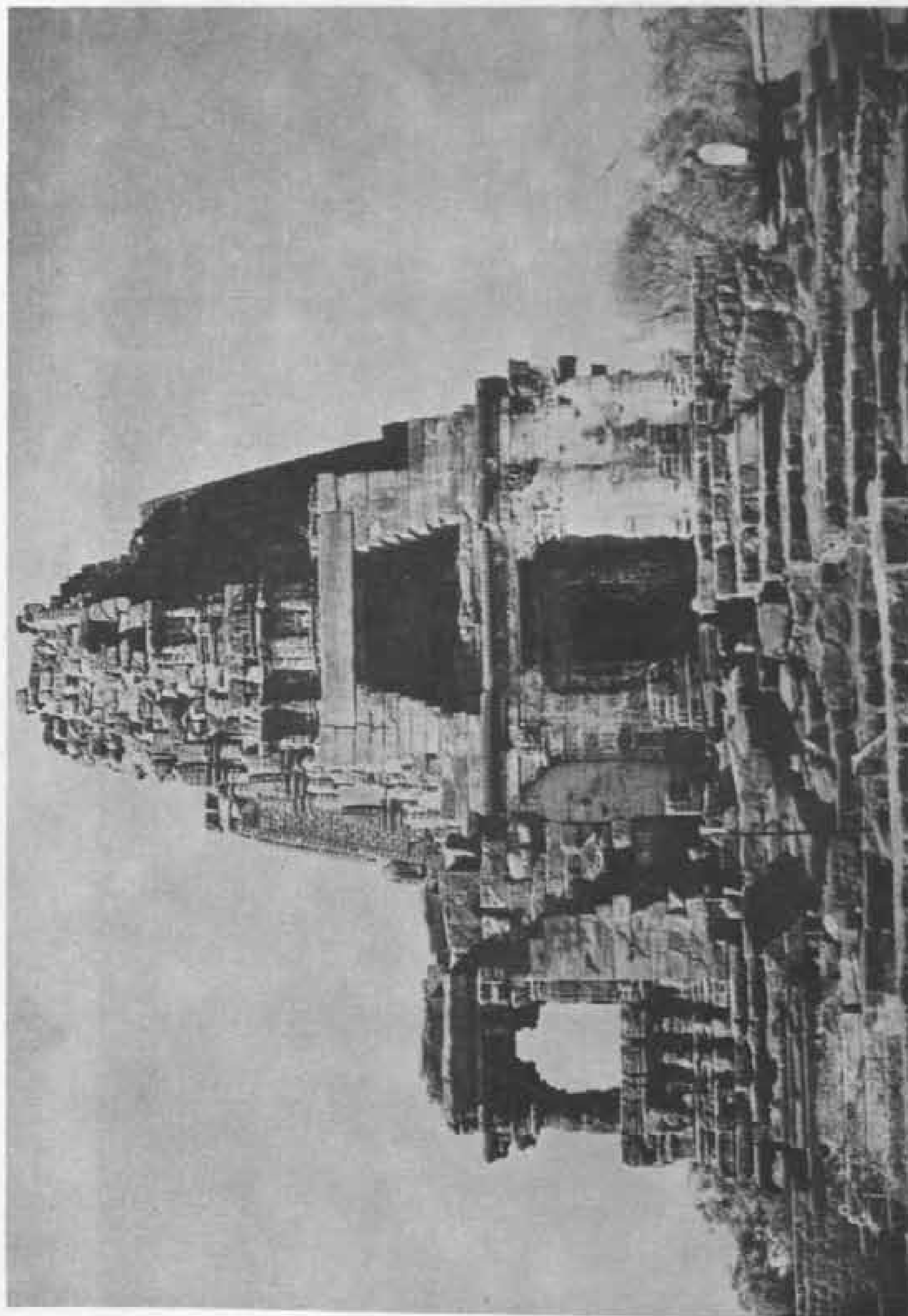
46. Archaeological Museum, Kalibangan: Terracotta inscribed *Chakla.* *See page 178*



47. Ashapuri: Lintel depicting navagrahas. *See page 183*



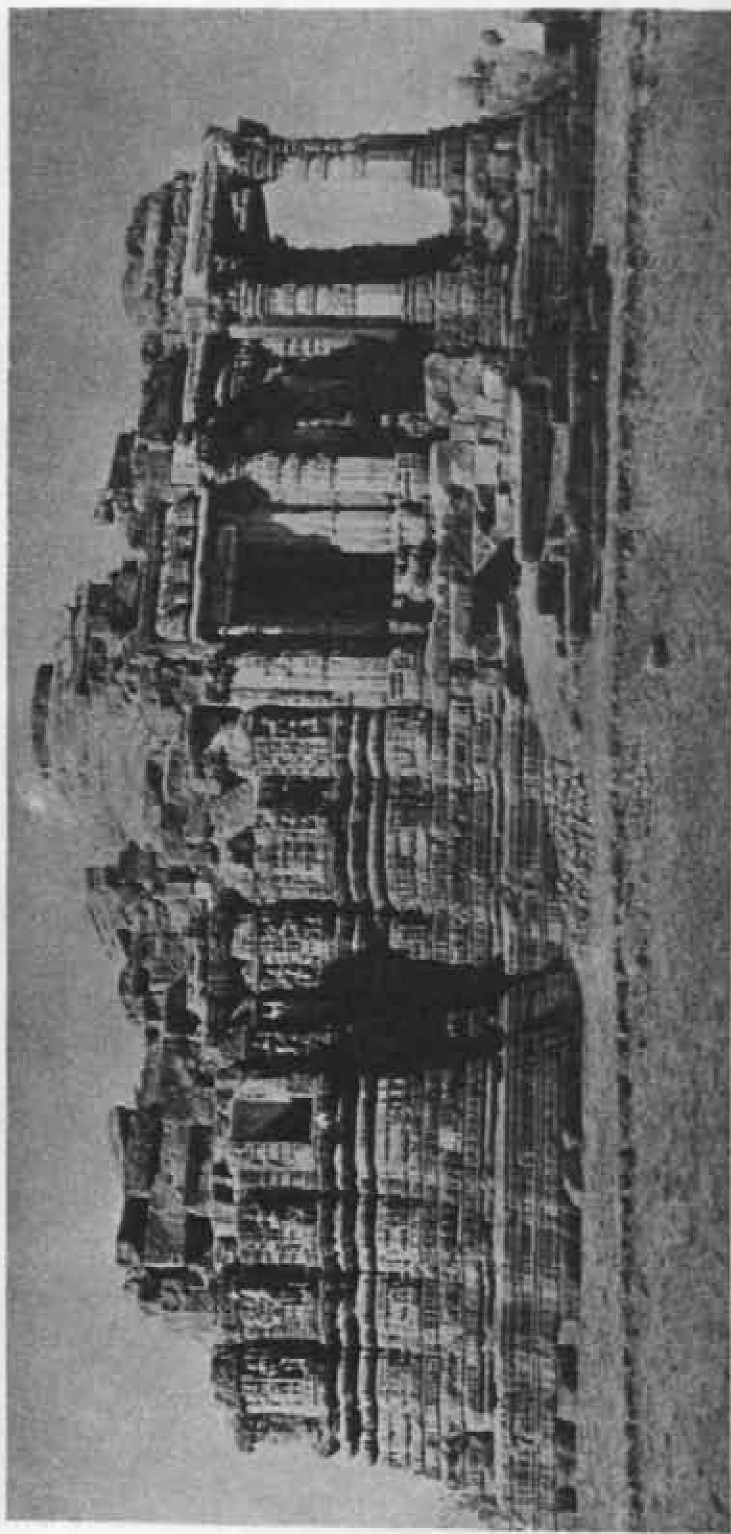
48. Jamli: Mahadeva temple, General view. *See page 183*



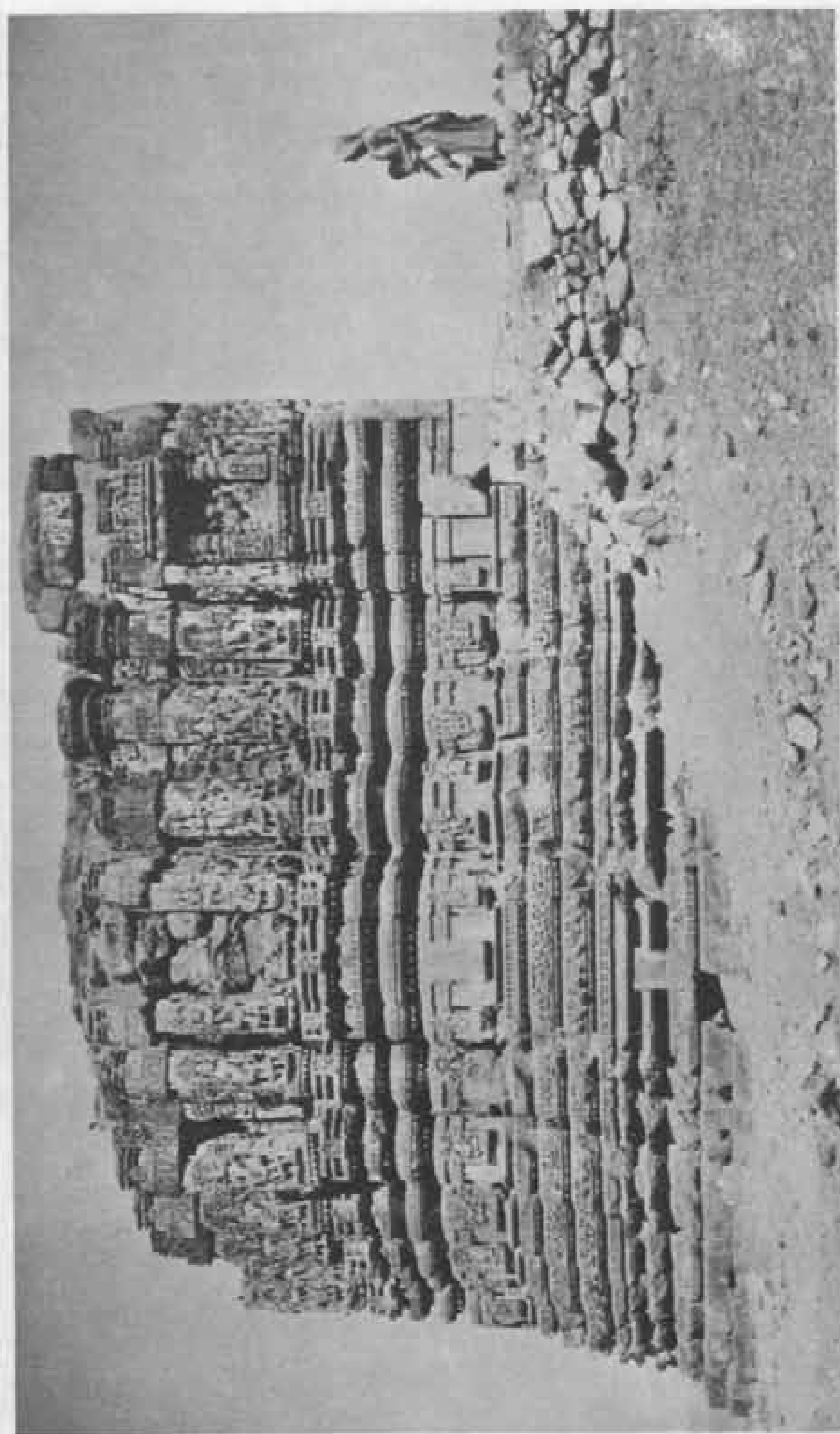
49. Un: Mahakaleswara temple, General view. *See page 183*



50. Un: Nilakanthesvara temple, General view. *See page 184*



51. Un: Chaubara Dera II, General view. *See page 184*



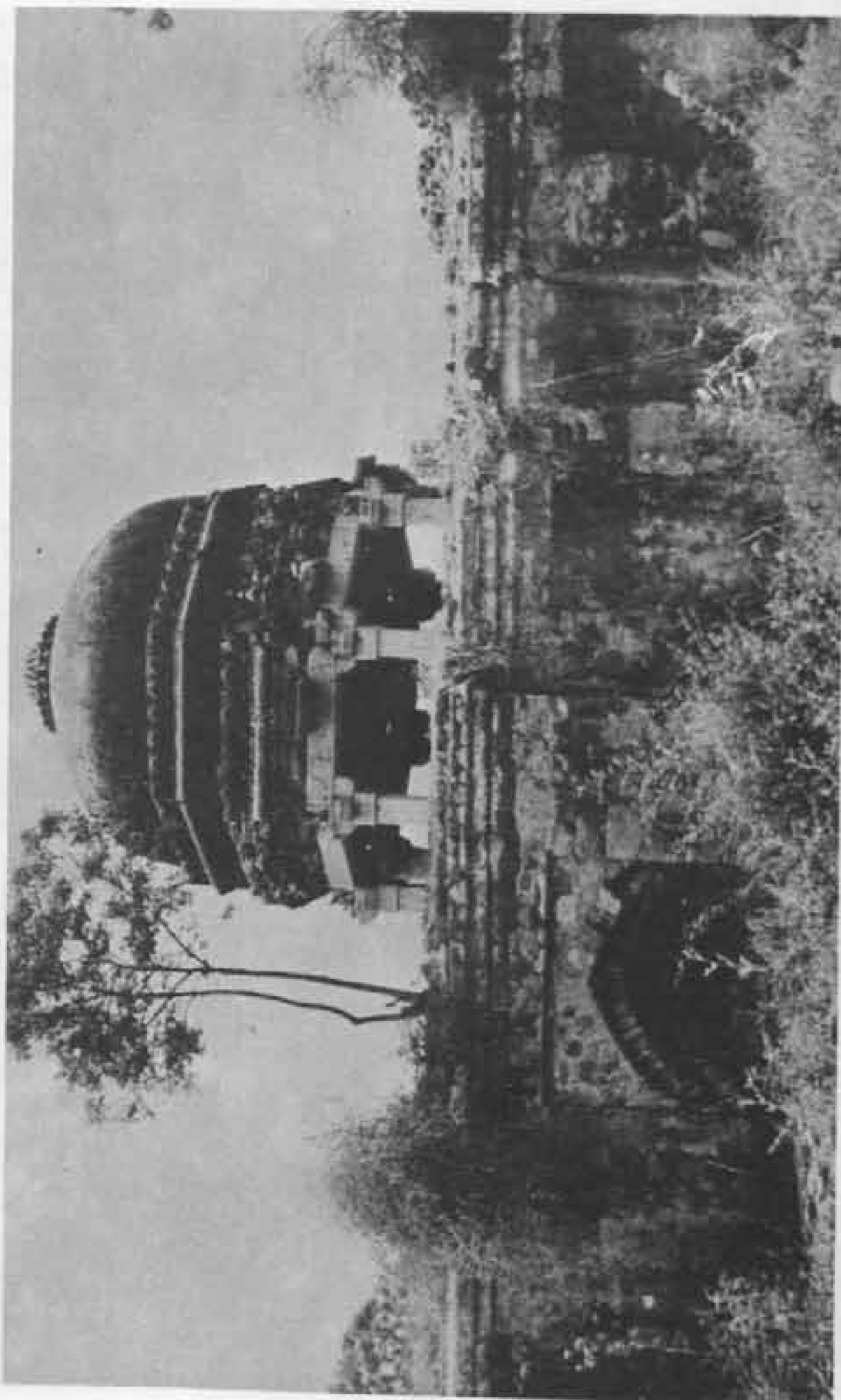
52. Nemawar: General view of Vishnu Temple. *See page 185*



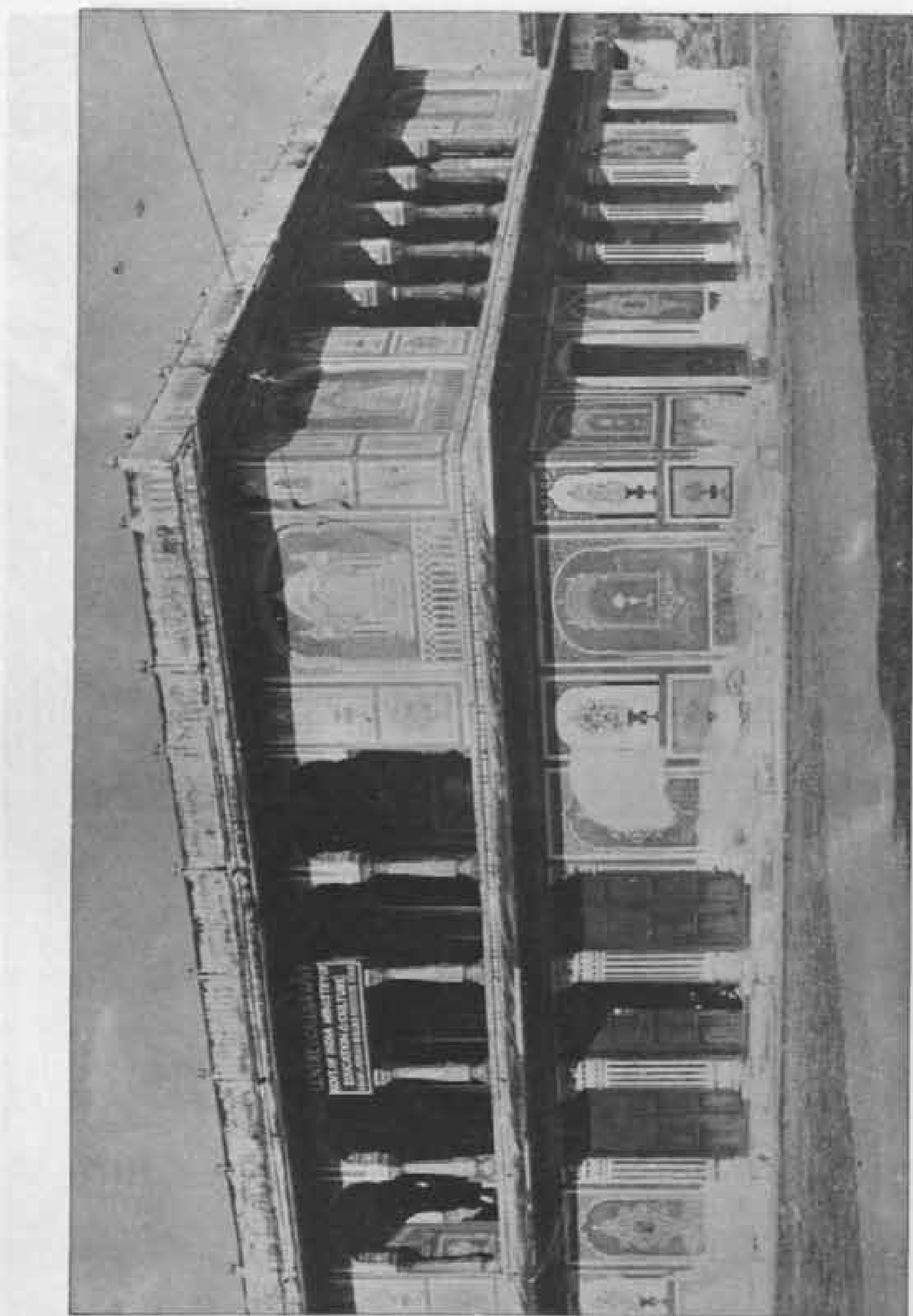
53. Nemawar: Vishnu temple, sculptures on southern *jangha*. *See page 185*



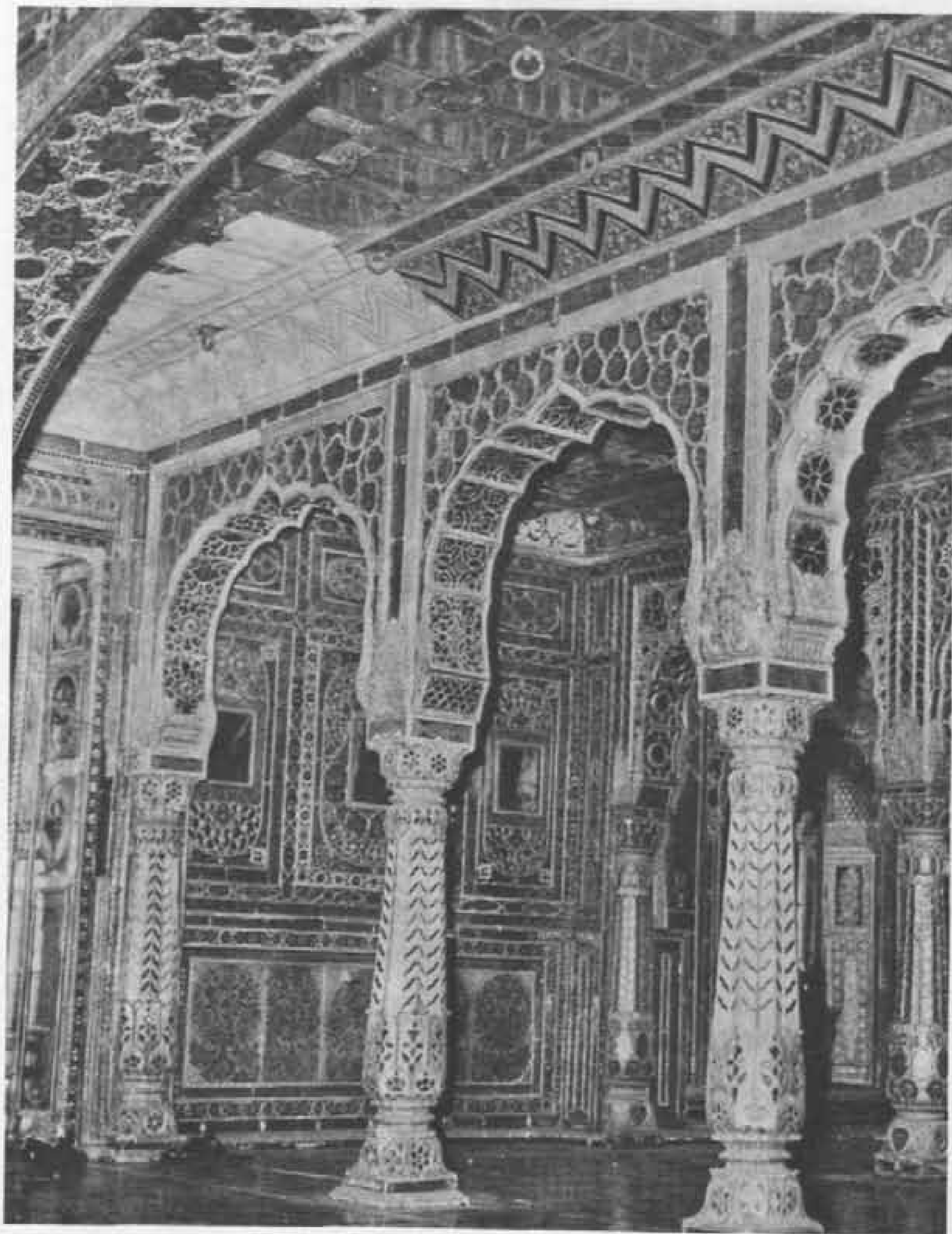
54. Arang: Bhand Deul, General view from south-east. *See page 185*



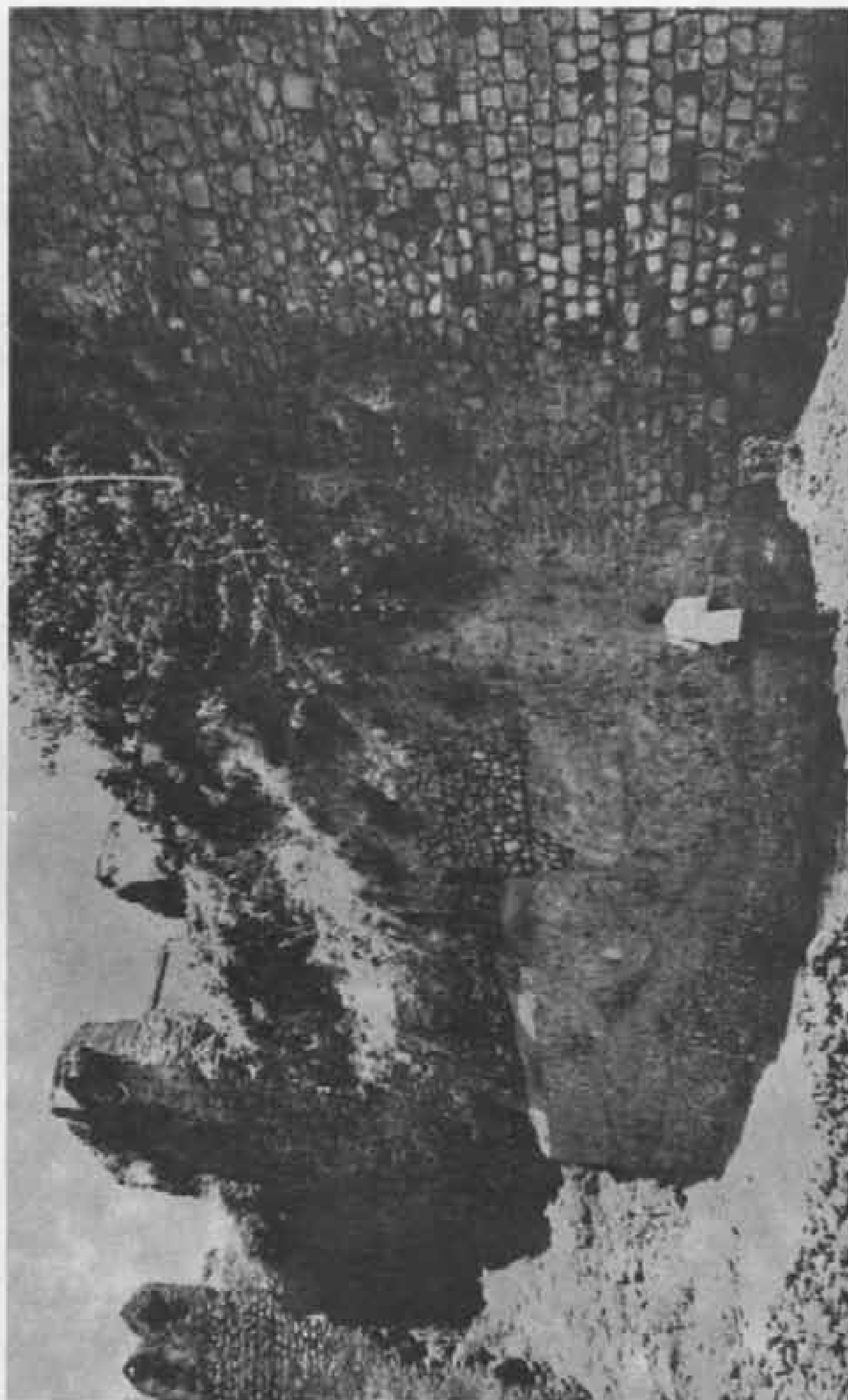
55. Vasant Vihar: Garden pavilion, *See page 188*



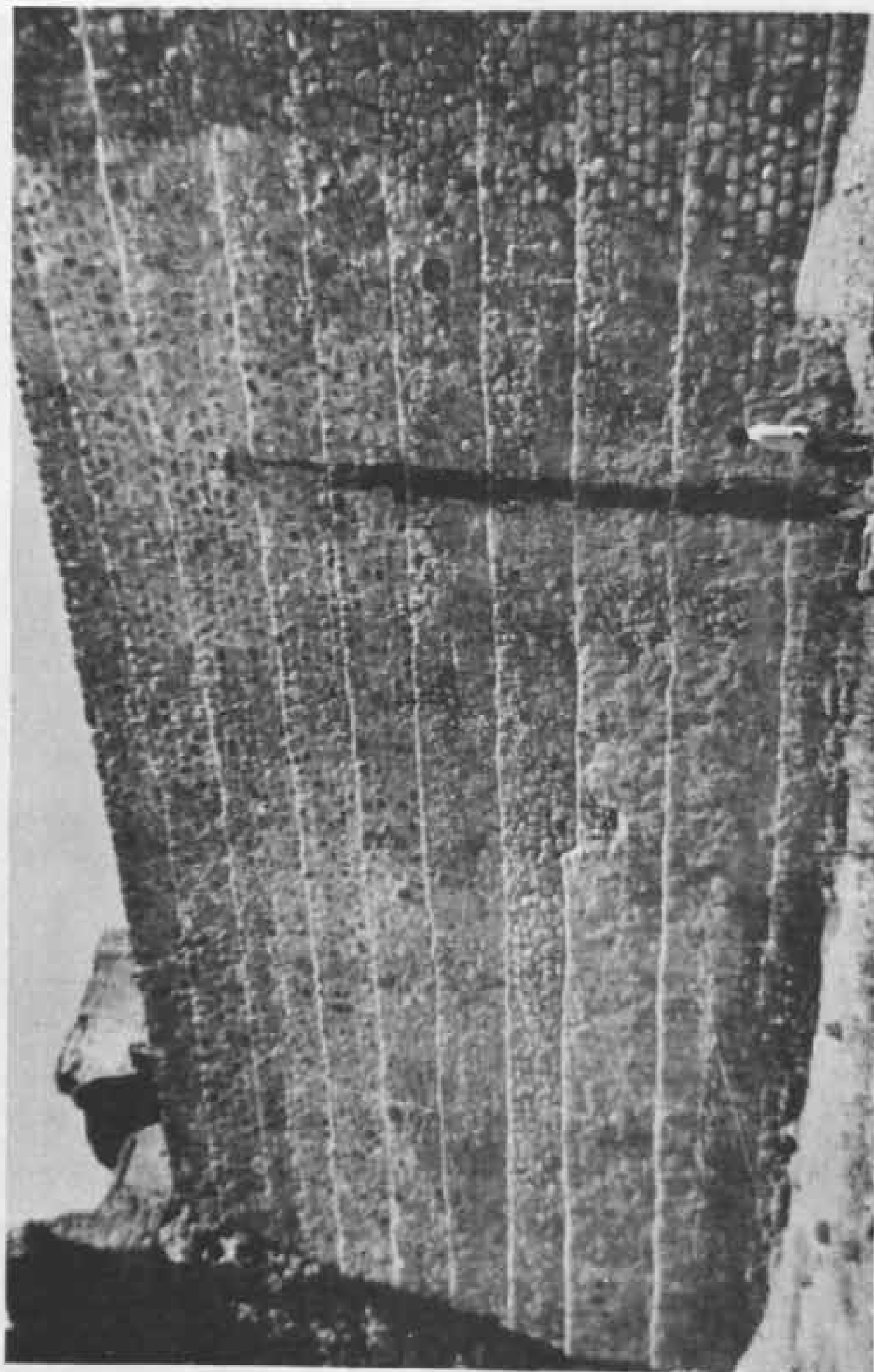
56. Tonk: Sunahri Kothi, General view. *See page 190*



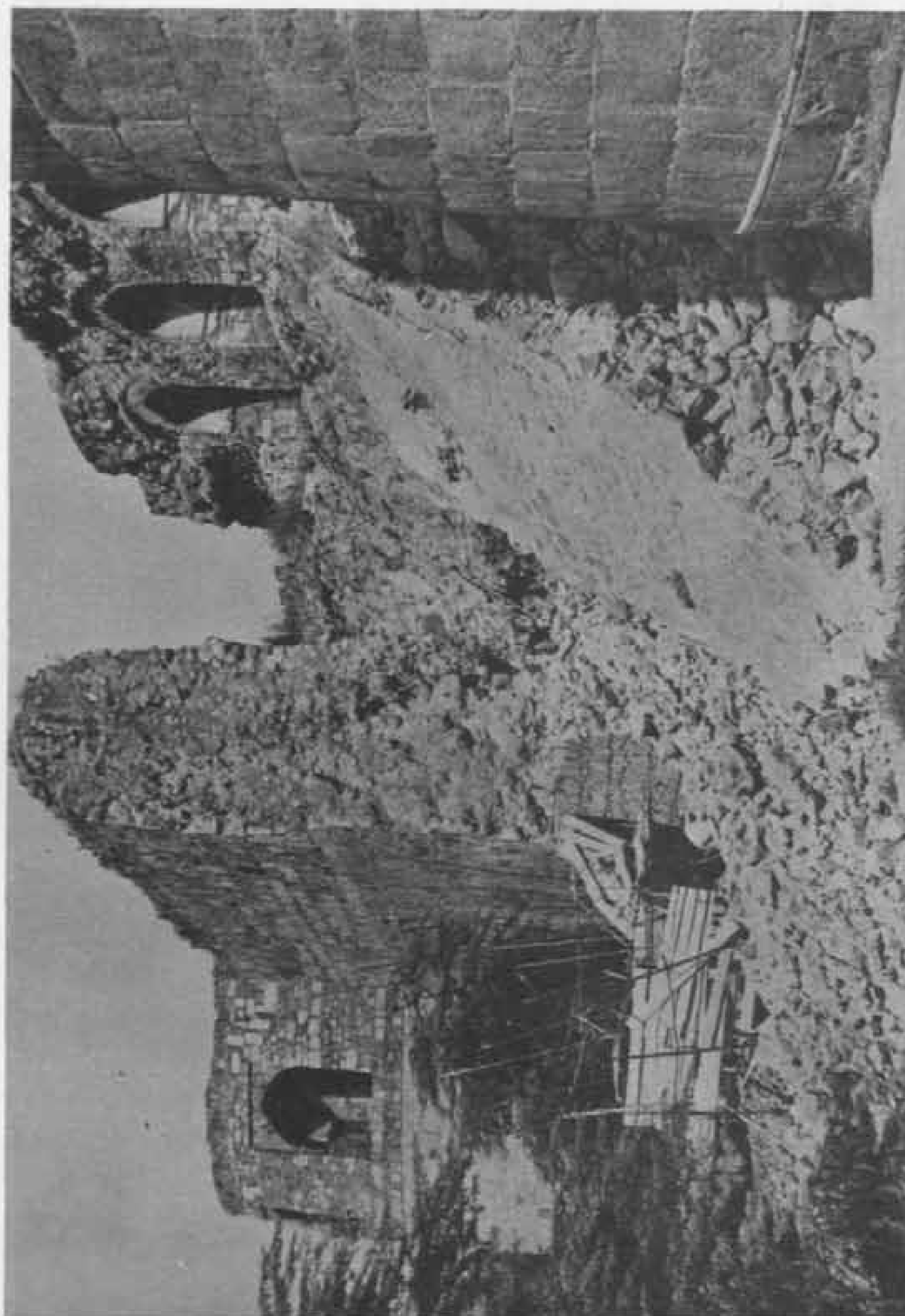
57. Tonk: Nawabs Baradari, details of decorations. *See page 190*



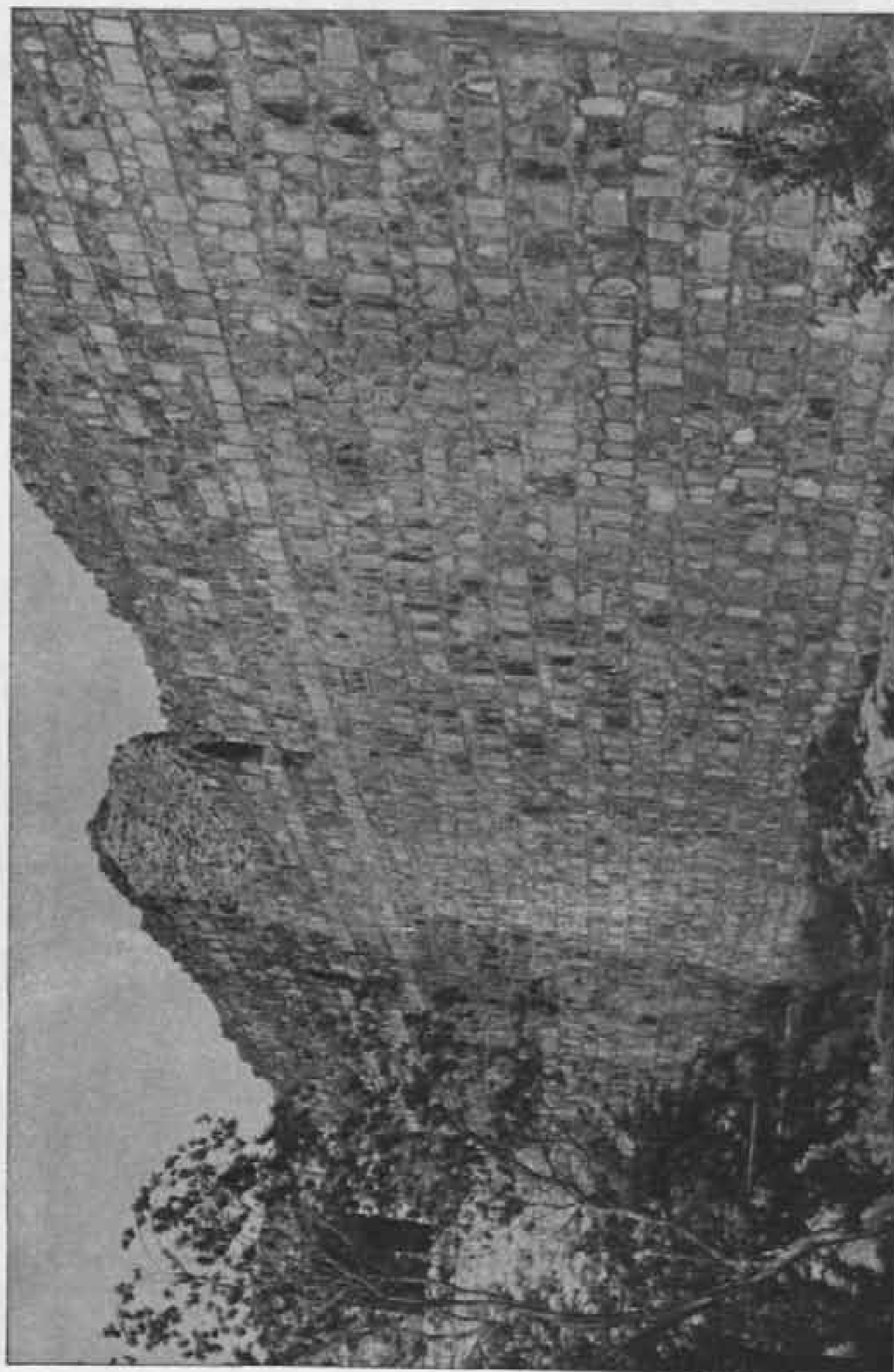
58. Burhanpur: Fort wall, before restoration. *See page 216*



59. Burhanpur: Fort wall, after restoration. *See page 216*



60 New Delhi: Purana Qila, Before conservation of northern fortification wall. *See page* 235



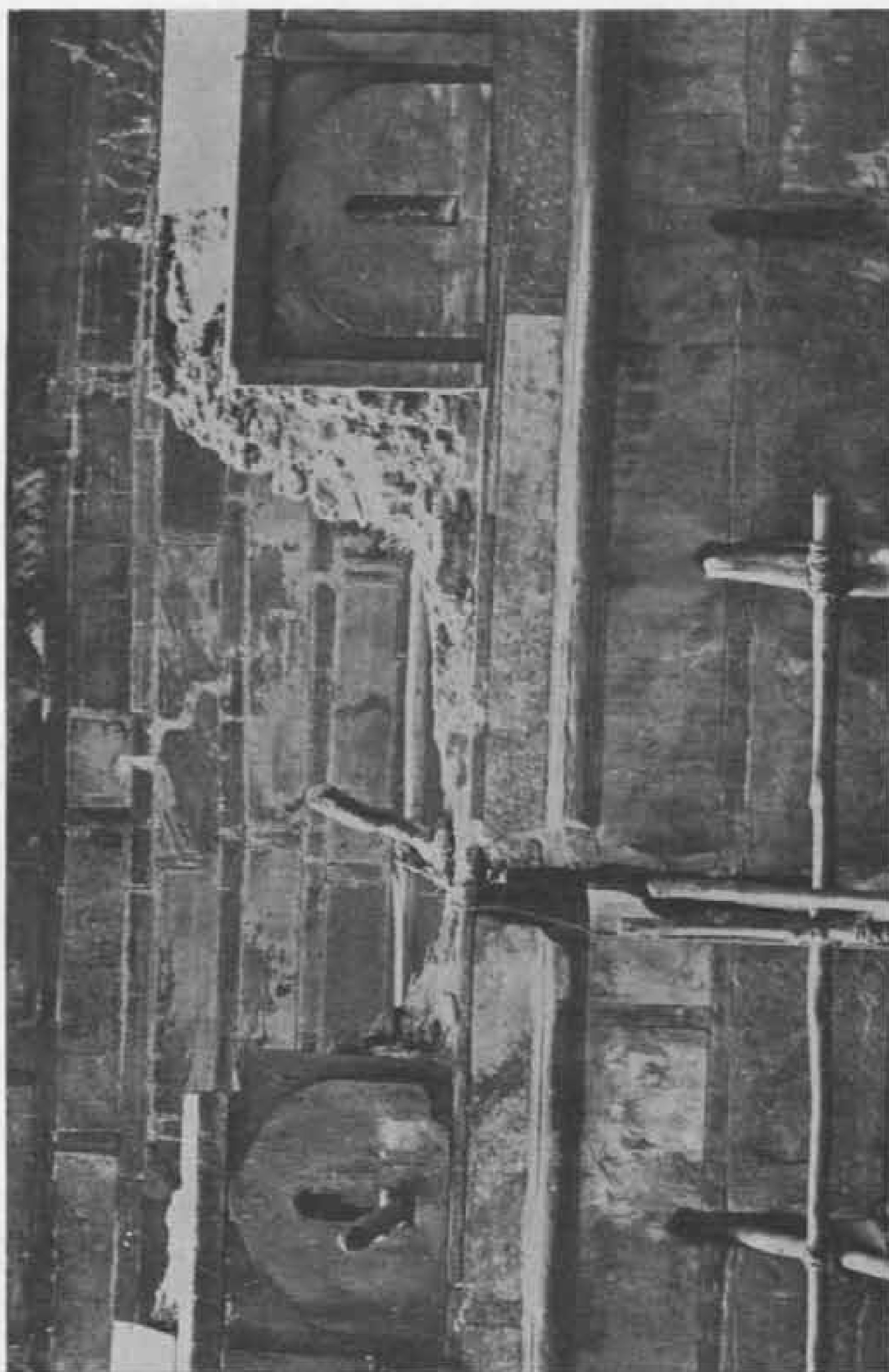
61. New Delhi: Purana Qila, after conservation of northern fortification wall. *See page 235*



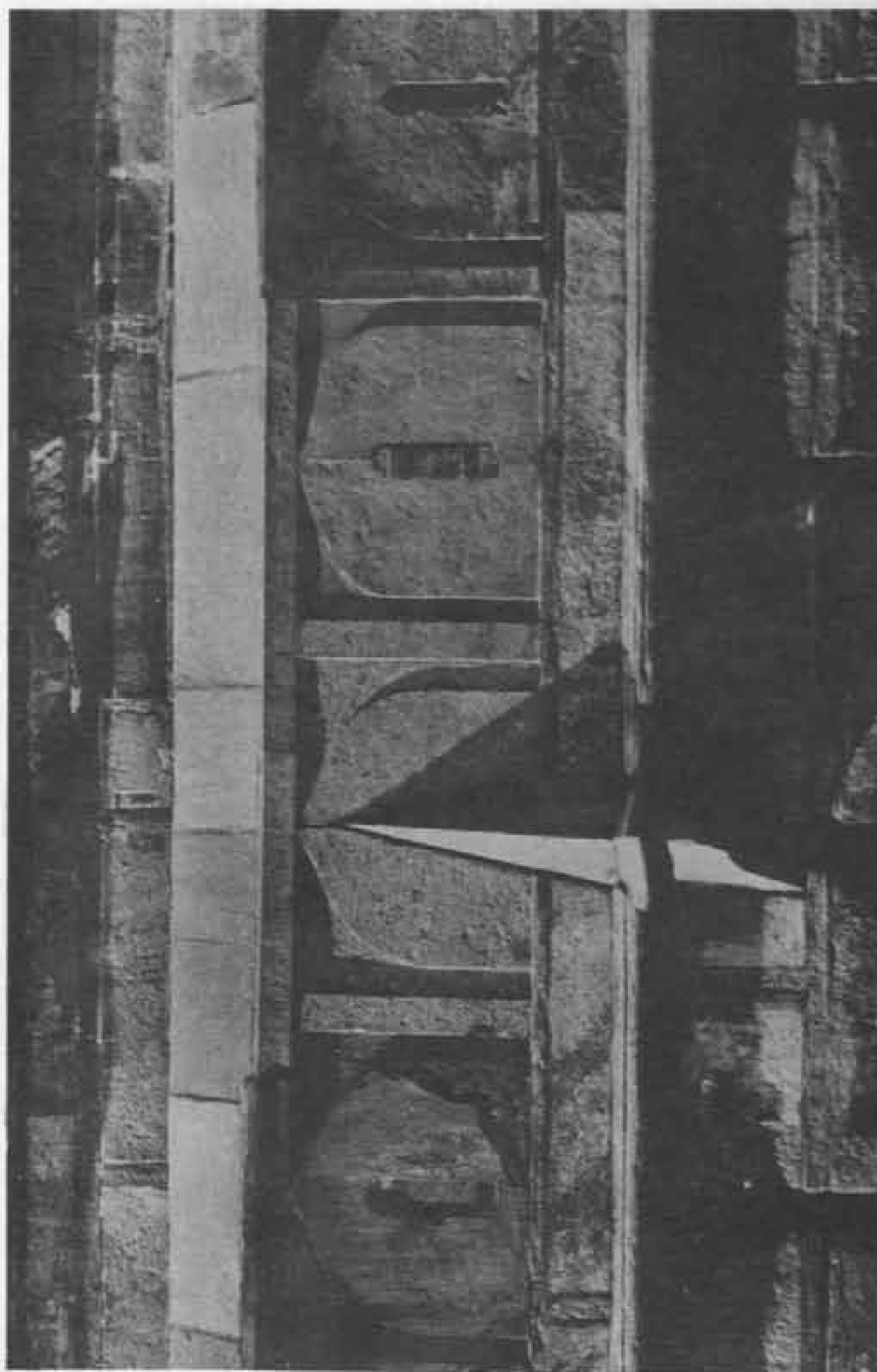
62 Hirehadagali: Kalleswara temple, before conservation. *See page 239*



63. Hirehadagali: Kalleswara temple, after conservation. *See page 239*



64 Agra: Fort, before repair of Kangura. *See page 243*



65. Agra: Fort, after repair of Kangura. *See page 243*

PRESERVATION OF MONUMENTS

MONUMENTS OF NATIONAL IMPORTANCE

Central Circle

MADHYA PRADESH

1. Temple of Koteshwar Mahadeva and Hanuman, Kashitola, District Balaghat.— The wide open joints of the shrine were made watertight with lime cement mortar, and to check the encroachment the enclosed area was fenced with barbed wire and iron angle posts.

2. Kamlapati Palace, Bhopal, District Bhopal.— In continuation of the previous year's work (*1983-84,* p. 205) the decayed wooden beams of the roof in the first floor were replaced with new salwood beams and watertightened with fresh cement concrete.

3. Bhima Kitchaka Temple, Malhar, District Bilaspur.— The fallen stones of the super structure was restored and the exposed portions of the plinth and superstructure watertight-tened. The surrounding areas of the temple were enclosed with barbed wire fencing on angle iron posts.

4. Duladeo Temple, Khajuraho, District Chhattarpur.— The open joints and hollow cavities of the *mandapa, mahamandapa* and *sikhara* were watertightened and sealed with lime cement mortar. The angle iron door shutters and fencing posts were repainted.

5. Temple Complex (Western Group), Khajuraho, District Chhattarpur.— To improve the complex, the door and window shutters and iron angle posts were repainted and the pathways and roads were provided with red *morum.*

6. Rock-Cut Caves, Bagh, District Dhar.— In continuation of last year's work *(1983-84,* p. 205), the cracked and damaged pillars in Cave 2 were dismantled and replaced with new R.C.C. pillars and finished with imitation work of architectural designs and geometric patterns in cement plaster matching to the original. The work is in progress.

7. Bhojshala, Dhar, District Dhar.— The damaged and decayed roof, beams and slabs were dismantled and replaced with new Zeerabad quarry limestone beams and slabs. The work is in progress.

8. Delhi Darwaza, Mandu, District Dhar.- In continuation of previous year's work *(1983-84,* p. 206), the missing and damaged random rubble stone masonry of the fortification wall adjoining the Delhi Darwaza was restored and decayed lime concrete roof of the gate and floor adjoining the mosque replaced with new ones as per original.

9. Somvati Kund, Mandu, District Dhar.— The work of taking out malba and repairs to the approach steps of a tank is in progress.

10. Taveli Mahal, Mandu, District Dhar.— Replacement of damaged and missing *chhajja* stones of first floor of the *mahal* with new Zeerabad quarry limestone is in progress.

11. Water Palace, Mandu, District Dhar.— In continuation of last year's work *(1983-84,* p. 206) the decayed lime concrete floors were dismantled and replaced, and the roof made watertight after raking out the surface.

12. Mahadeo Temple, Deobaloda, District Durg.— In continuation of last year's work *(1983-84,* p. 206), R.S.J. girders have been inserted in cracked beams after grooving them carefully and sealed with araldite and stone dust toning. The temporary supports to the cracked beams have also been removed.

13. Chowk Mohalla Hammam, Burhanpur, District East Nimar.— In continuation of last year's work *(1983-84,* p. 206), the cavities of the walls have been underpinned and plastered. The sunken and hollow floors have been filled, rammed and finished with fresh lime concrete, and to check the seepage of rain water, the dome was" made watertight.

14. Fort, Burhanpur, District East Nimar.- In continuation of last year's work *(1983-84,* p. 206), the damaged and collapsed fort wall was restored with random rubble stone-masonry in *kankar* lime and sand mortar (Pis. 58-59). The roof was watertightened.

15. Tomb of Shah Nawaz Khan, Burhanpur, District East Nimar.- Restoration of damaged and fallen walls, grouting of the cracks, replacement of old, decayed and damaged floor and watertightenmg of the roof and dome is in progress.

16. Mamleshwara Temple, Mandhata, District East Nimar.- The bulged out stones of *sikhara* have been reset, and the fresh fine chiselled ashlar stones were provided to replace the damaged and missing stones. The stone flooring of inner side of the temple has been reset and pointed. The work of providing and laying flagstones flooring on lime concrete base is in progress.

17. Siddhnatha Temple, Mandhata, District East Nimar.- Restoration of a stone masonry compound wall with departmentally available stone in lime -mortar and watertightening the

shrine to check the seepage was attended to and the work is in progress.

18. Bada Madarasa, Chanderi, District Guna.— In continuation of last year's work *(1983-84,* pp, 206-7), the broken stone roof slabs and deteriorated and missing flagstone flooring were replaced with new ones. The displaced stones of the tomb were restored and the roof terrace was provided with fresh concrete.

19. Shahzadi-ka-Roza, Chanderi, District Guna.— The missing and damaged flagstone flooring was replaced with new stones.

20. Guard Room, Man Mandir Palace Complex, Gwalior Fort, District Gwalior.— In continuation of last year's work *(1983-84,* p.207), the damaged walls were restored with coarsed rubble stone masonry and ashlar stone masonry, and the roof was also provided with fresh lime concrete.

21. Tomb of Muhammad Ghaus, Gwalior, District Gwalior.— In continuation of last year's work(*1983-84,* p. 207) the damaged and missing compound wall was restored in coarsed rubble masonry in cement mortar. The work is in progress.

22. Tomb of Tansen and Mosque, Gwalior, District Gwalior.— Replacement of damaged and missing flagstone flooring with new stones is in progress.

23. Chausath Yogini Temple, Bheraghat, District Jabalpur.— In continuation of last year's work *(1983-84,* p. 207), the damaged and decayed approach stone steps were replaced with new ones.

24. Madan Mahal, Jabalpur, District Jabalpur.— In continuation of last year's work *(l983-84,p.* 207) the cavities were underpinned with dry random rubble masonry and the cracks have been grouted with cement and sand sullary. The work of raising the height of wall with coarsed rubble masonry in cement and sand mortar is in progress.

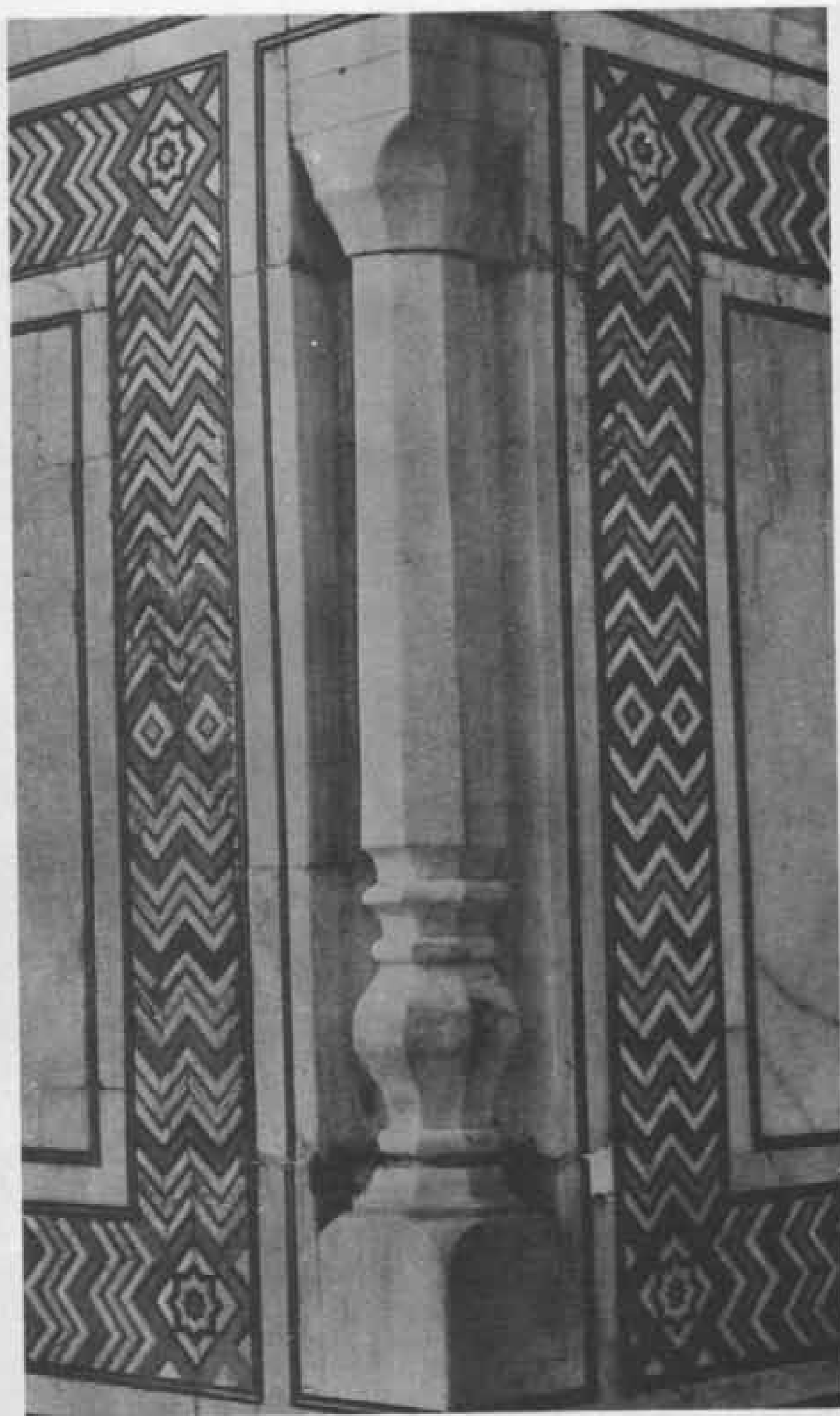
25. Mahadeo Temple, Maranpur, District Raipur.— The work of restoration of a stone masonry compound wall in lime mortar and watertightening the temple is in progress.

26. Siva Temple, Bhojpur, District Raisen.— In continuation of last year's work *(1983-84,* p. 207), the filling of core and covering the roof of temple with architectural members including clamping with copper clamps is in progress.

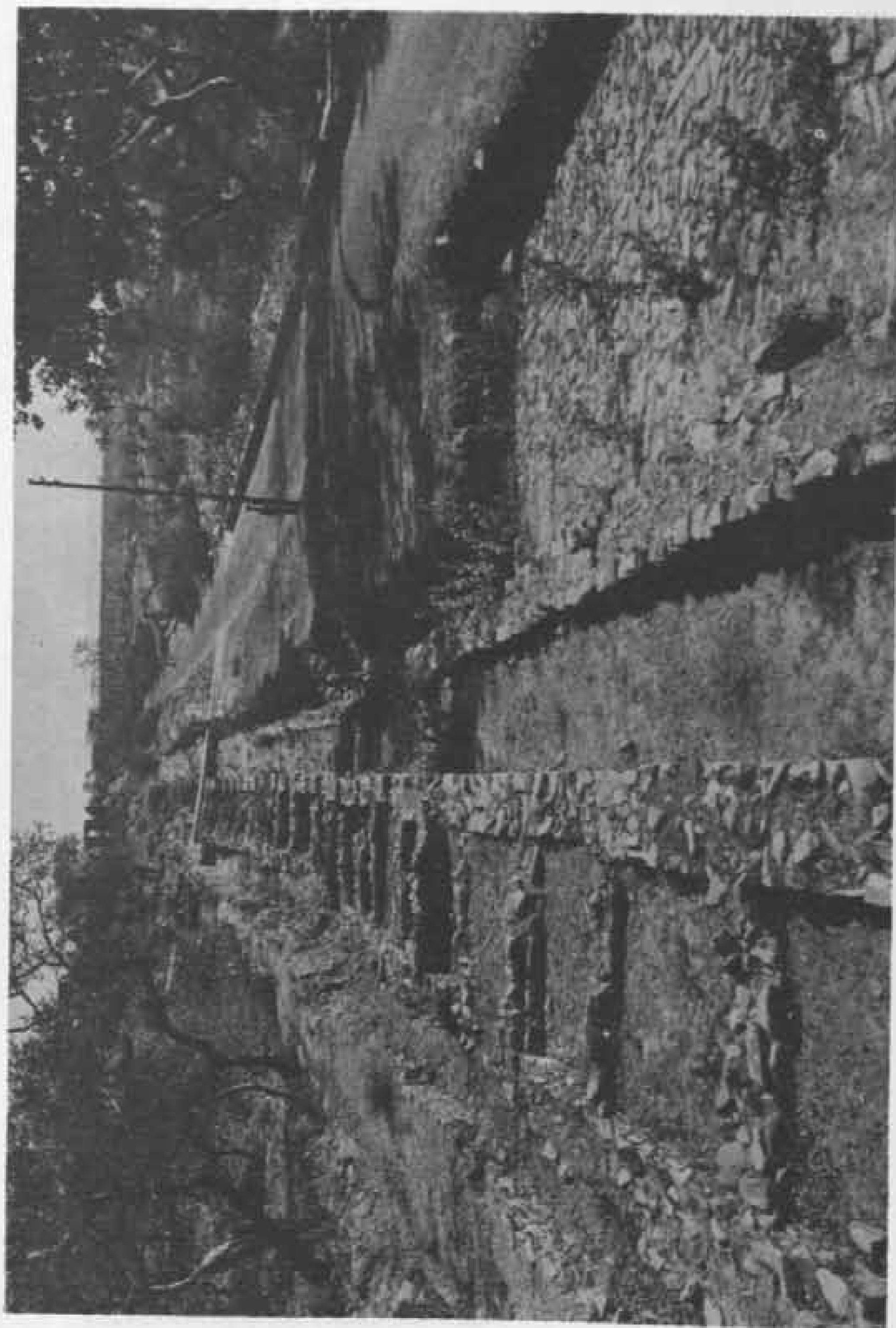
27. Buddhist Stupas, Muralkhurd, District Raisen.— The damaged, bulged and fallen casing stones of Stupa 1 was restored in dry stone masonry and the top was watertightened.



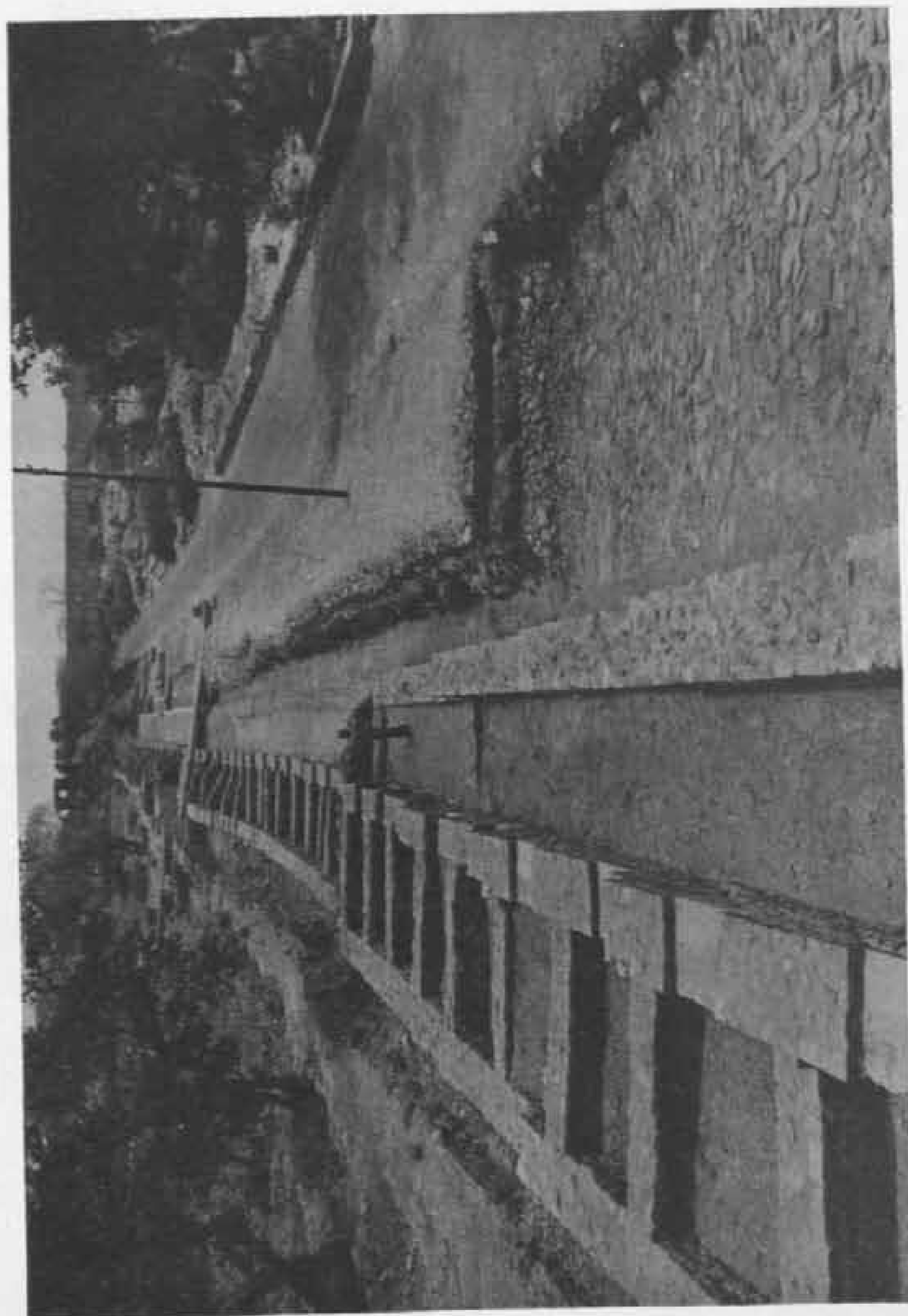
66. Agra: Taj Mahal, before repair of pilaster, *See page 243*



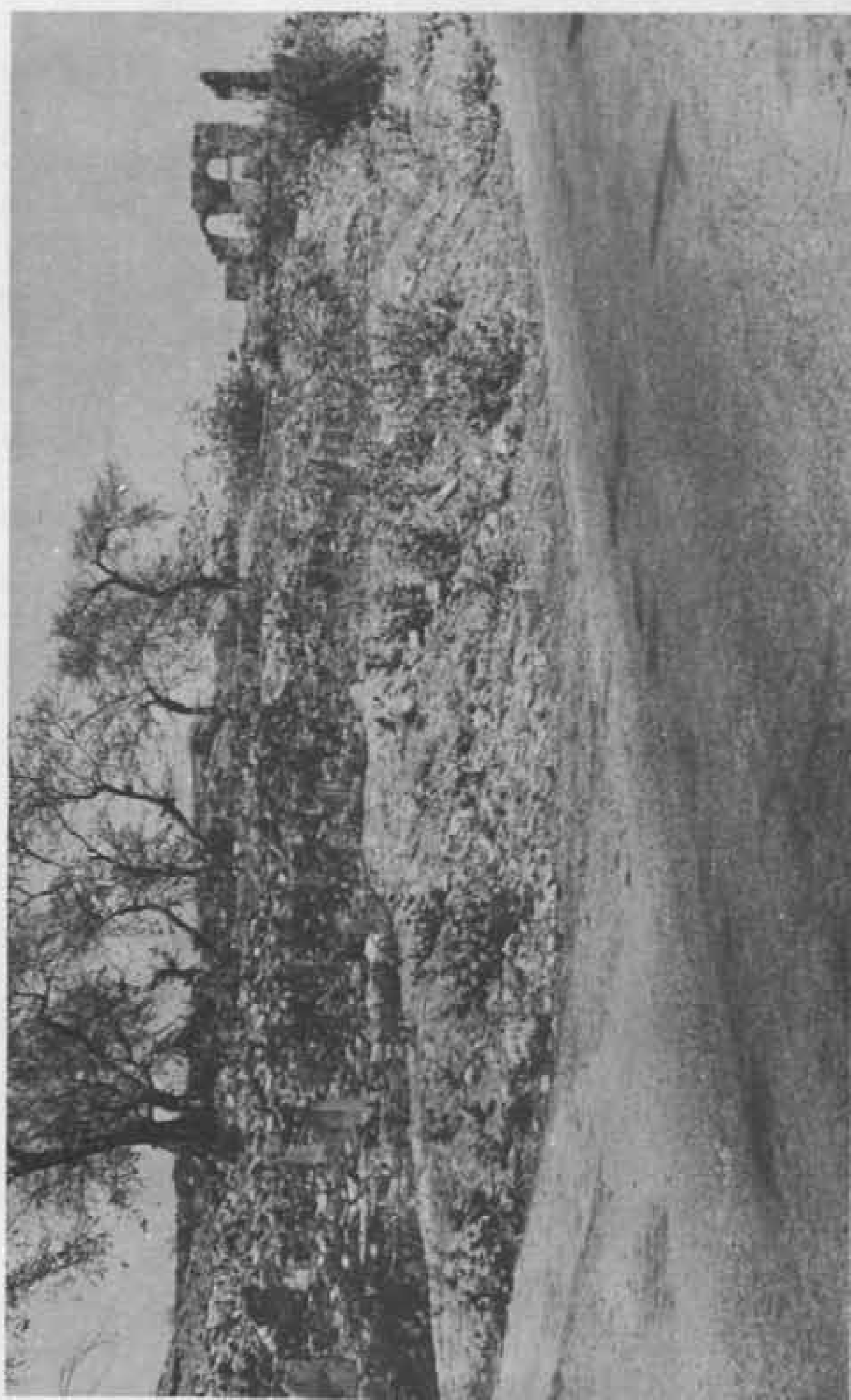
67. Agra: Taj Mahal, after repair of pilaster. *See page 243*



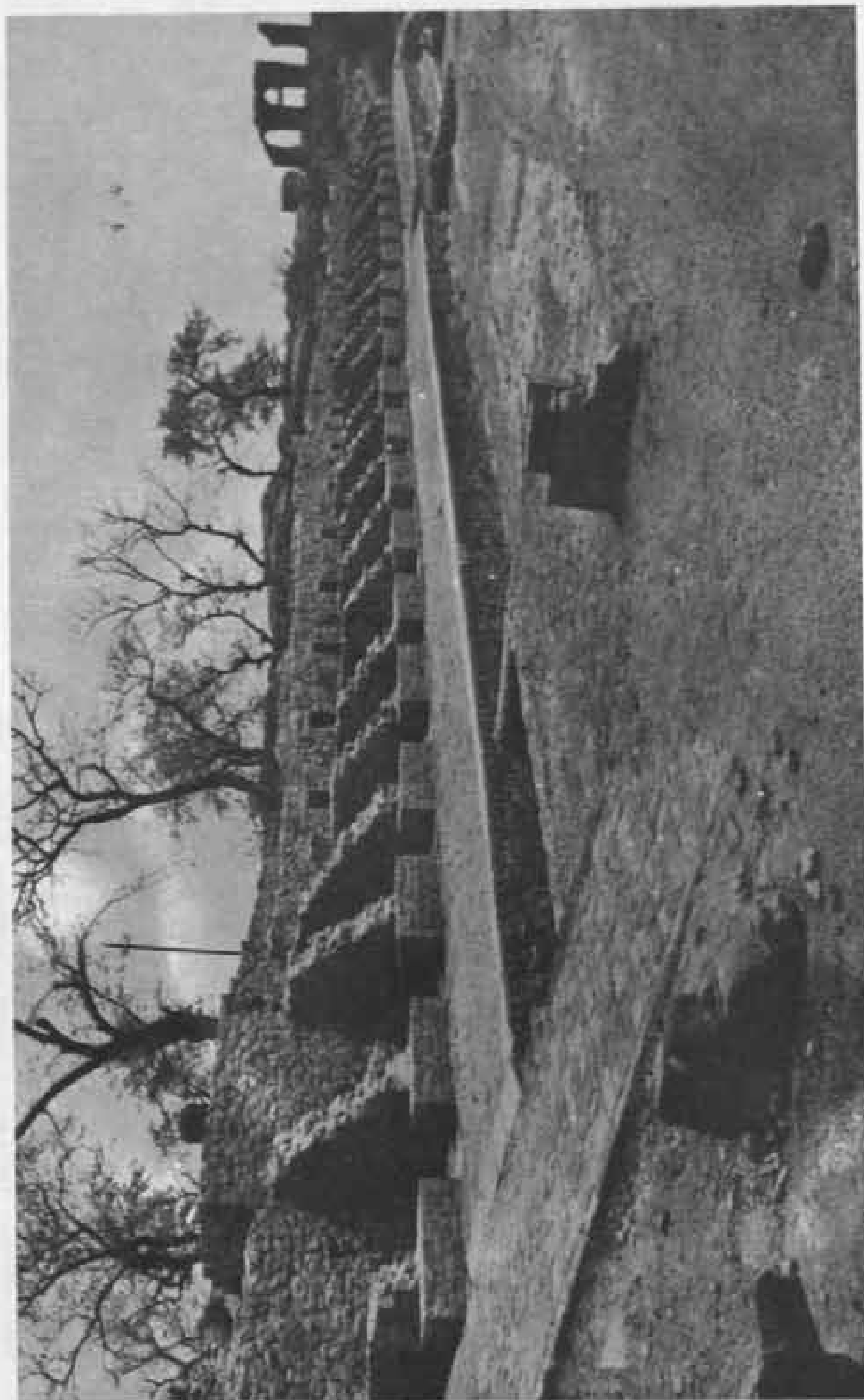
68. Fatehpur Sikri: Bazar complex, before restoration. *See page 244*



69. Fatehpur Sikri: Bazar complex, after restoration. *See page 244*



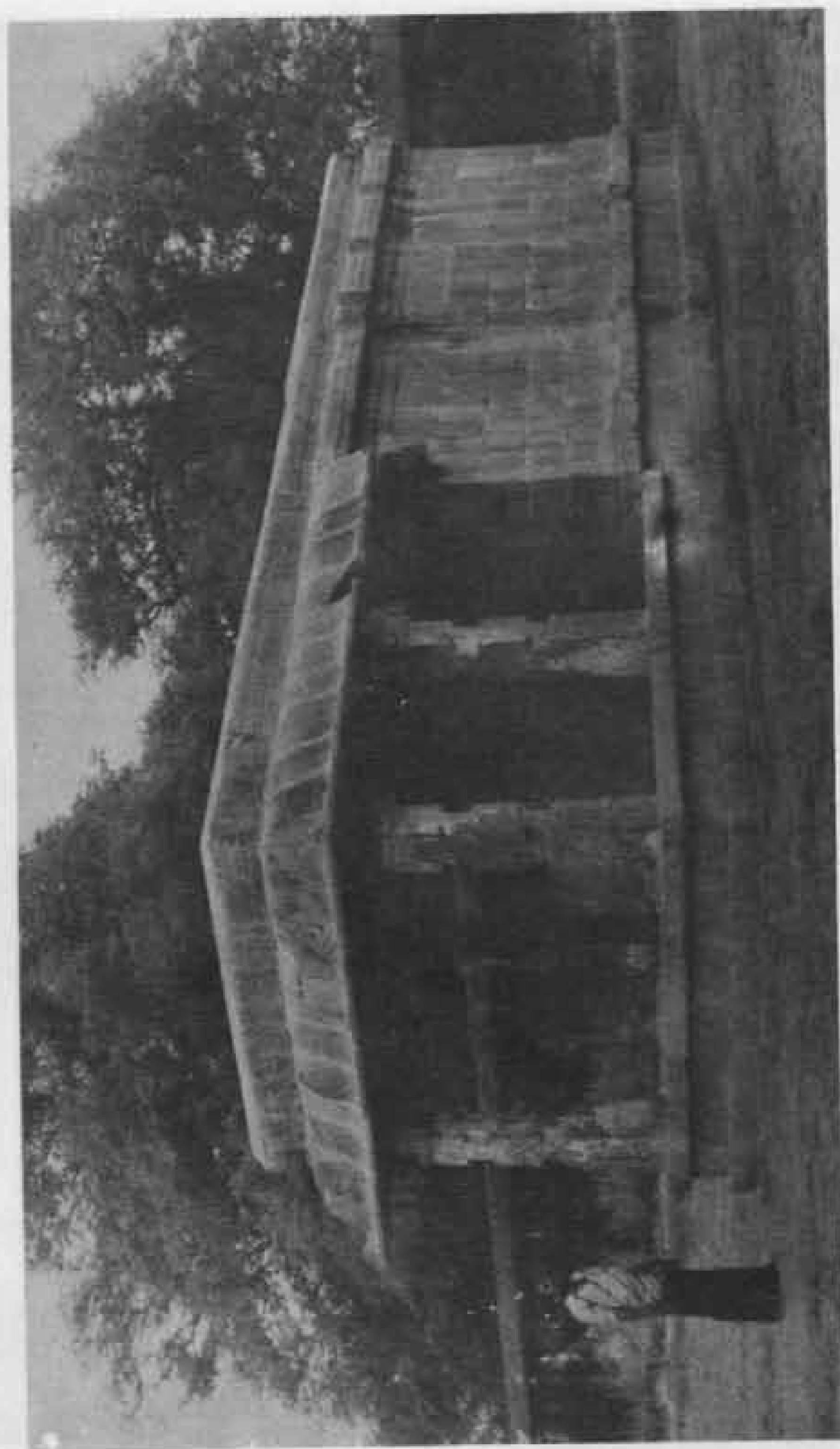
70. Fatehpur Sikri: Naubat Khana, before restoration. See page 244



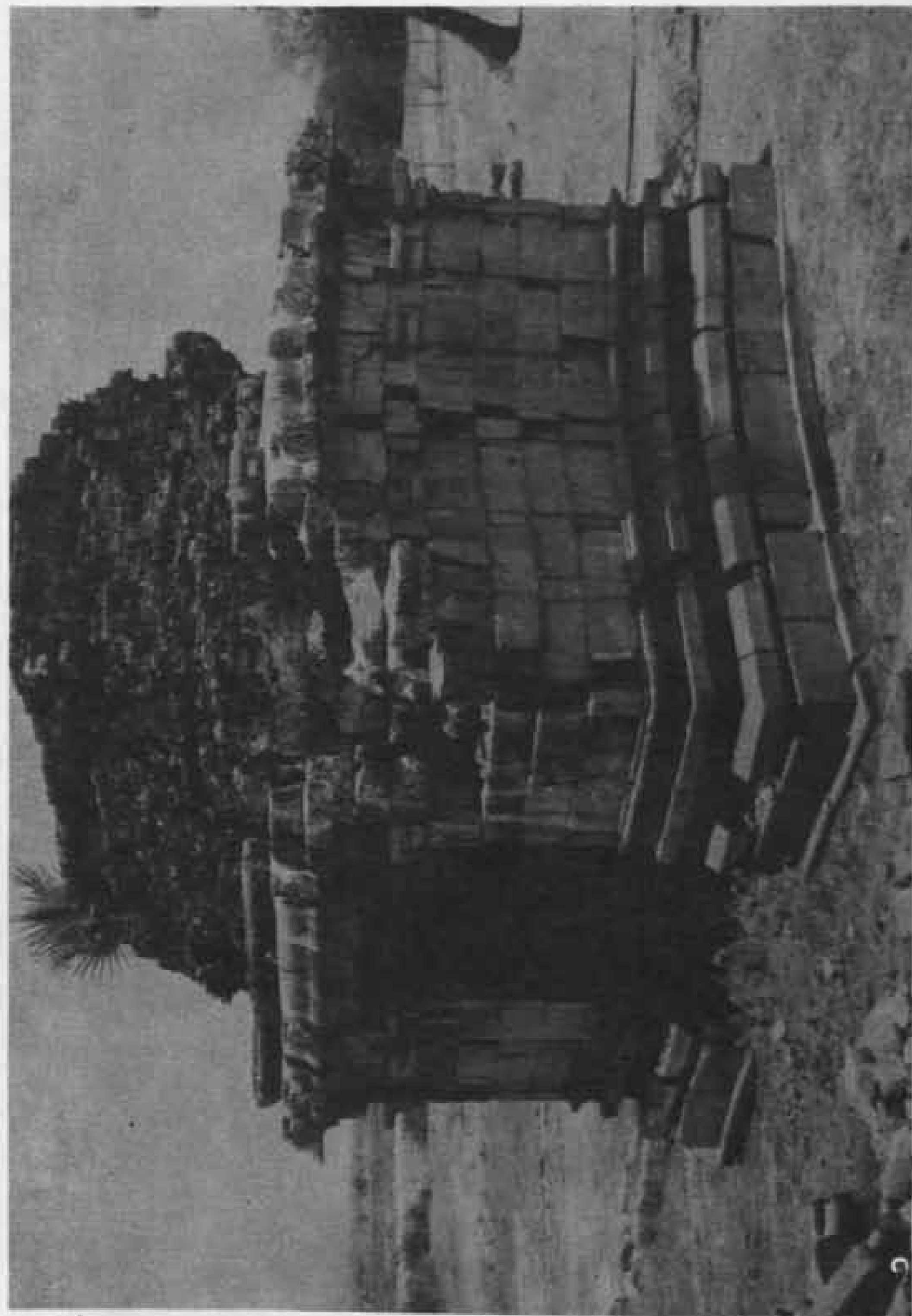
71. Fatehpur Sikri: Naubat Khana, after restoration. *See page 244*



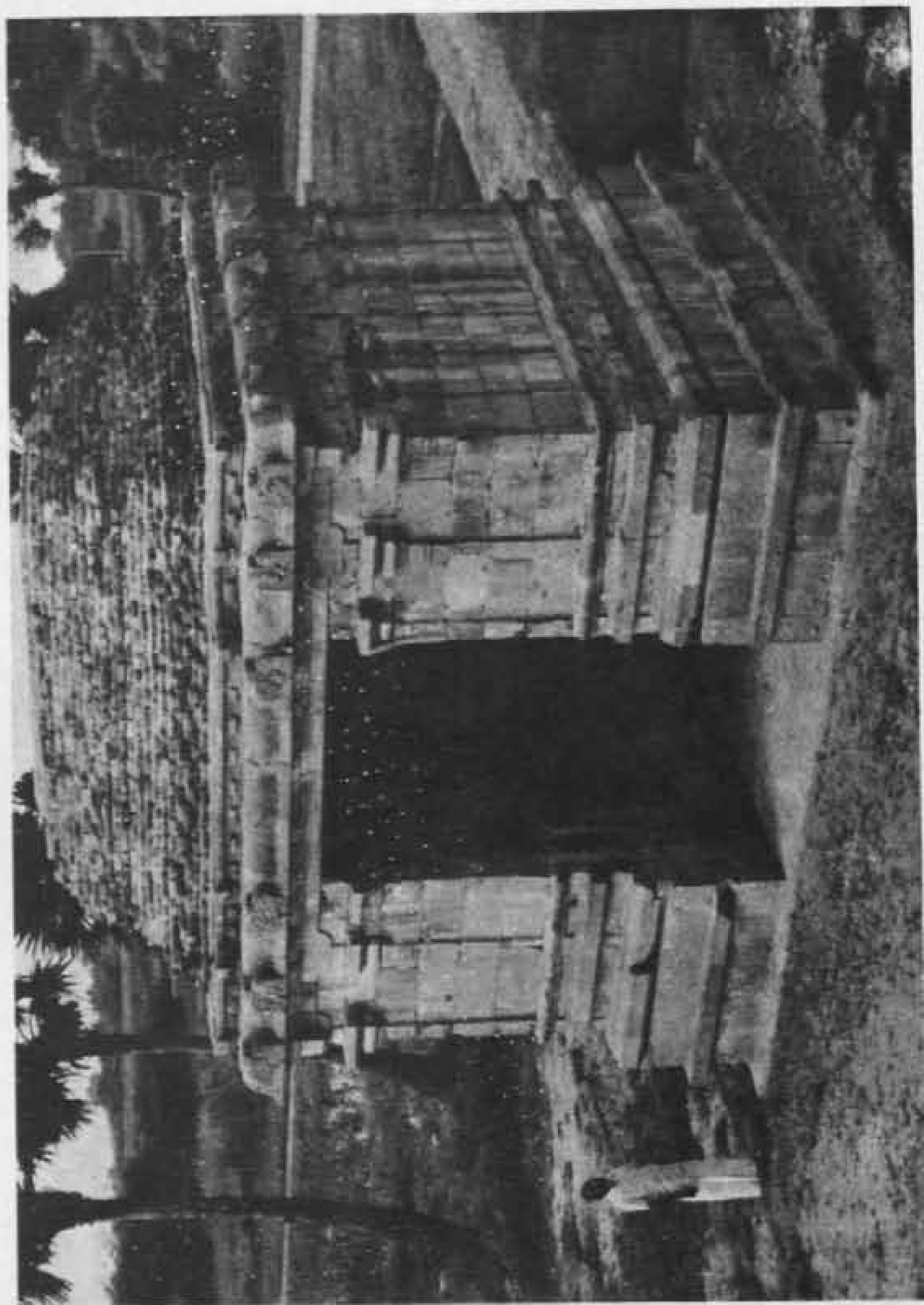
72. Tirumukkudal: Andal shrine, before conservation. *See page 251*



75. Tirumukkudal: Andal shrine, after conservation. *See page 251*



74. Nattery: Chandramoulisvara temple, before restoration of *gopura*. *See page 252*



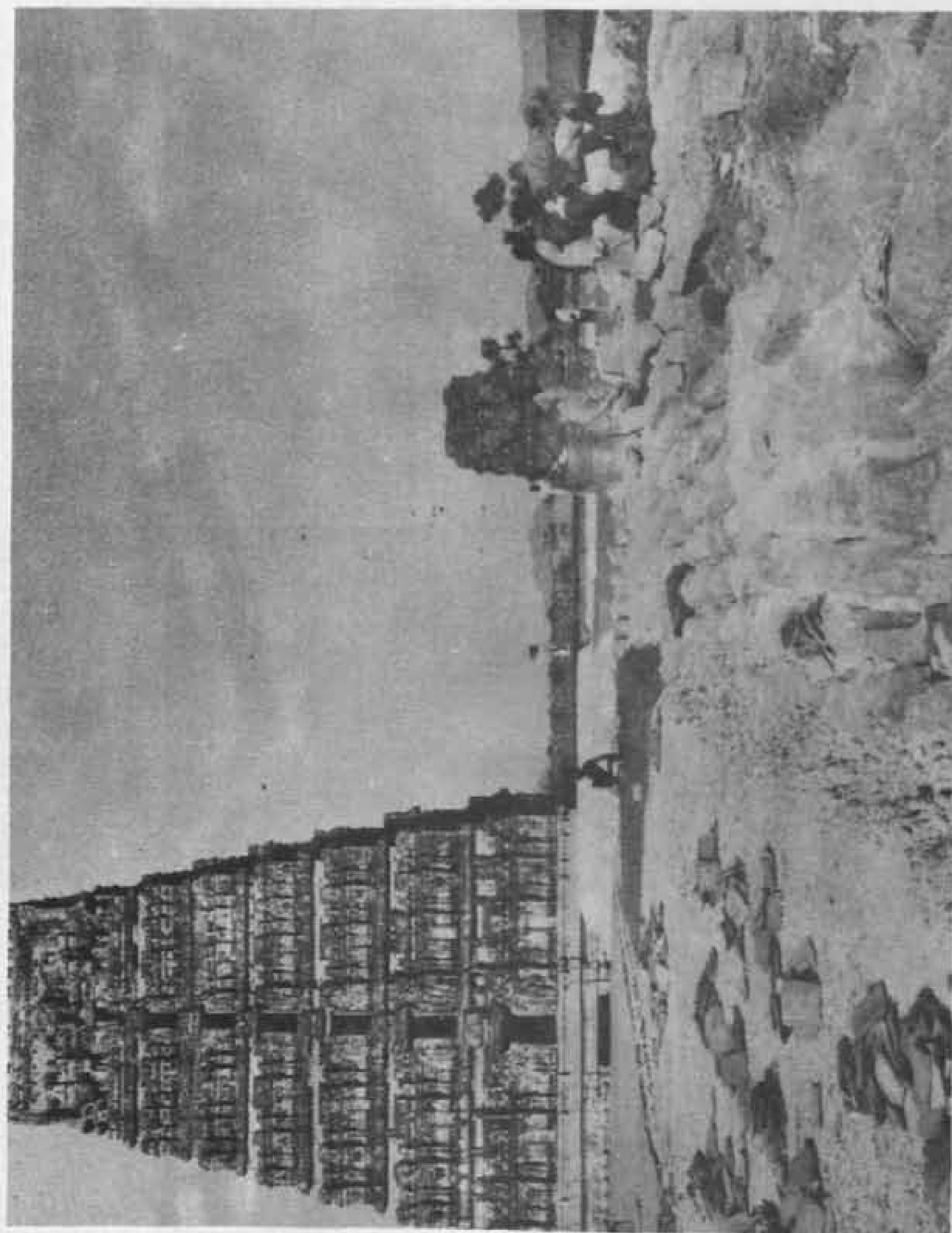
75. Nattery: Chandramoulisvara temple, after restoration of *gopura*. *See page 252*



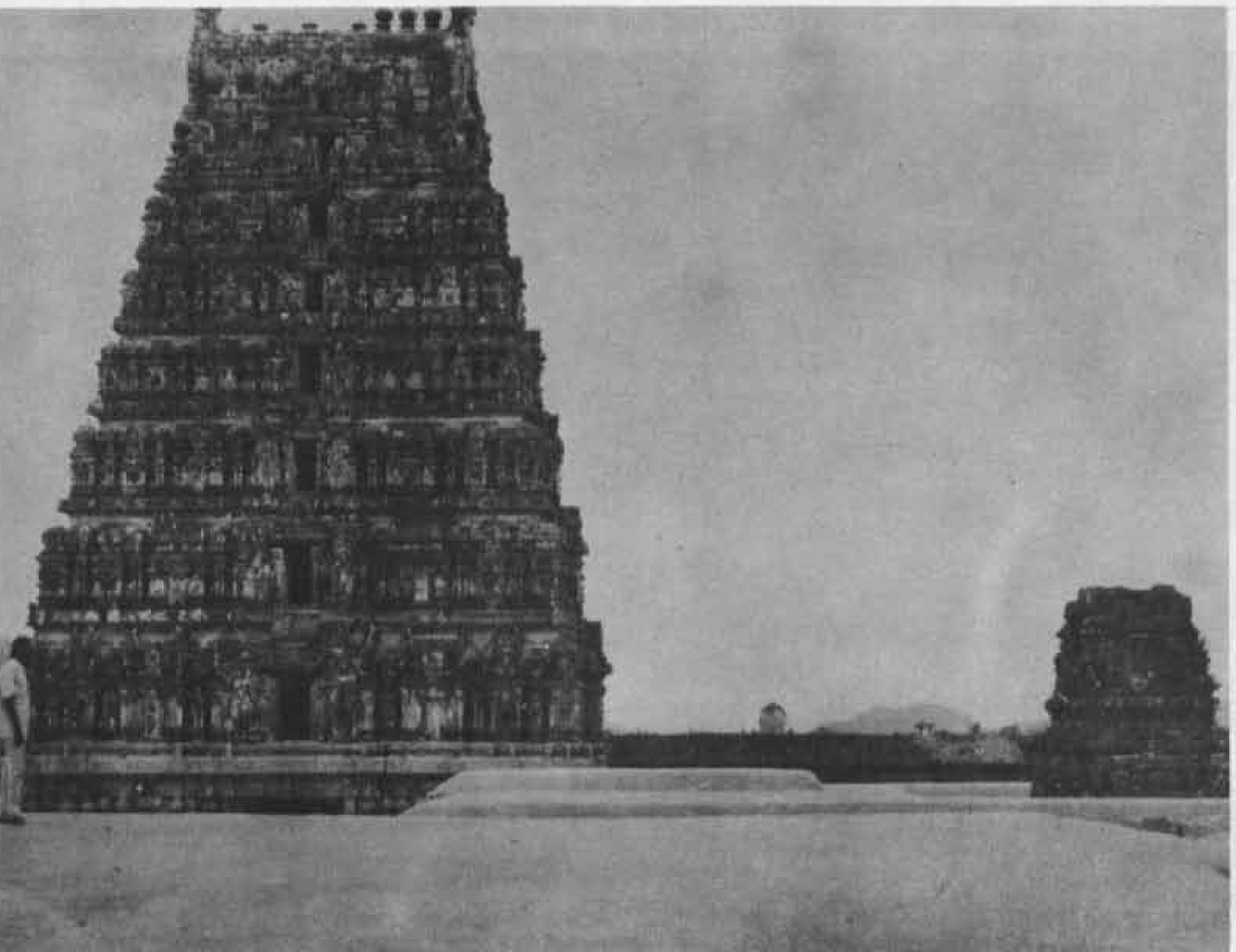
76. Gingee: Krishnagiri fort wall, before conservation. *See page 253*



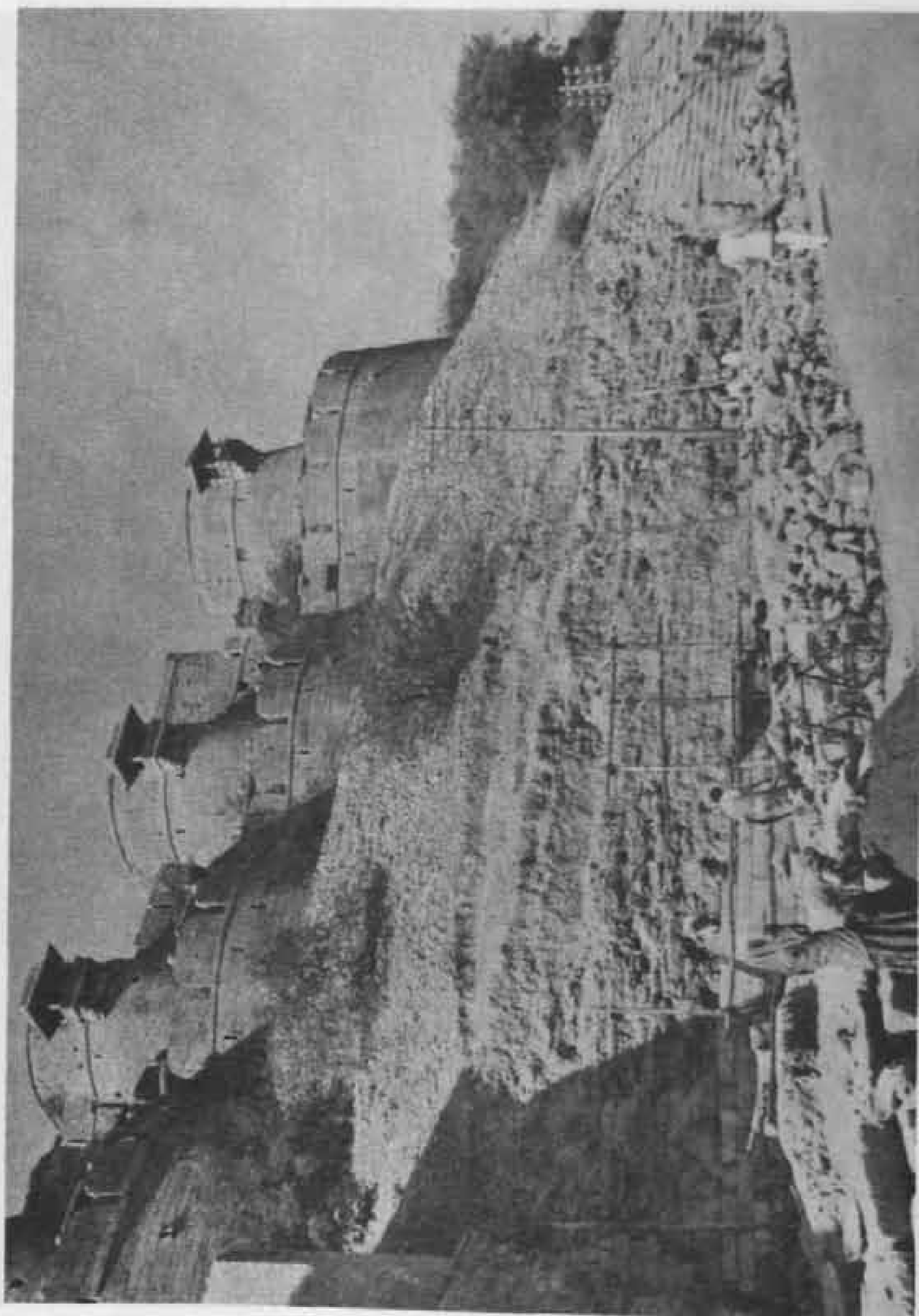
77. Gingee: Krishnagiri fort wall, after conservation. *See page 253*



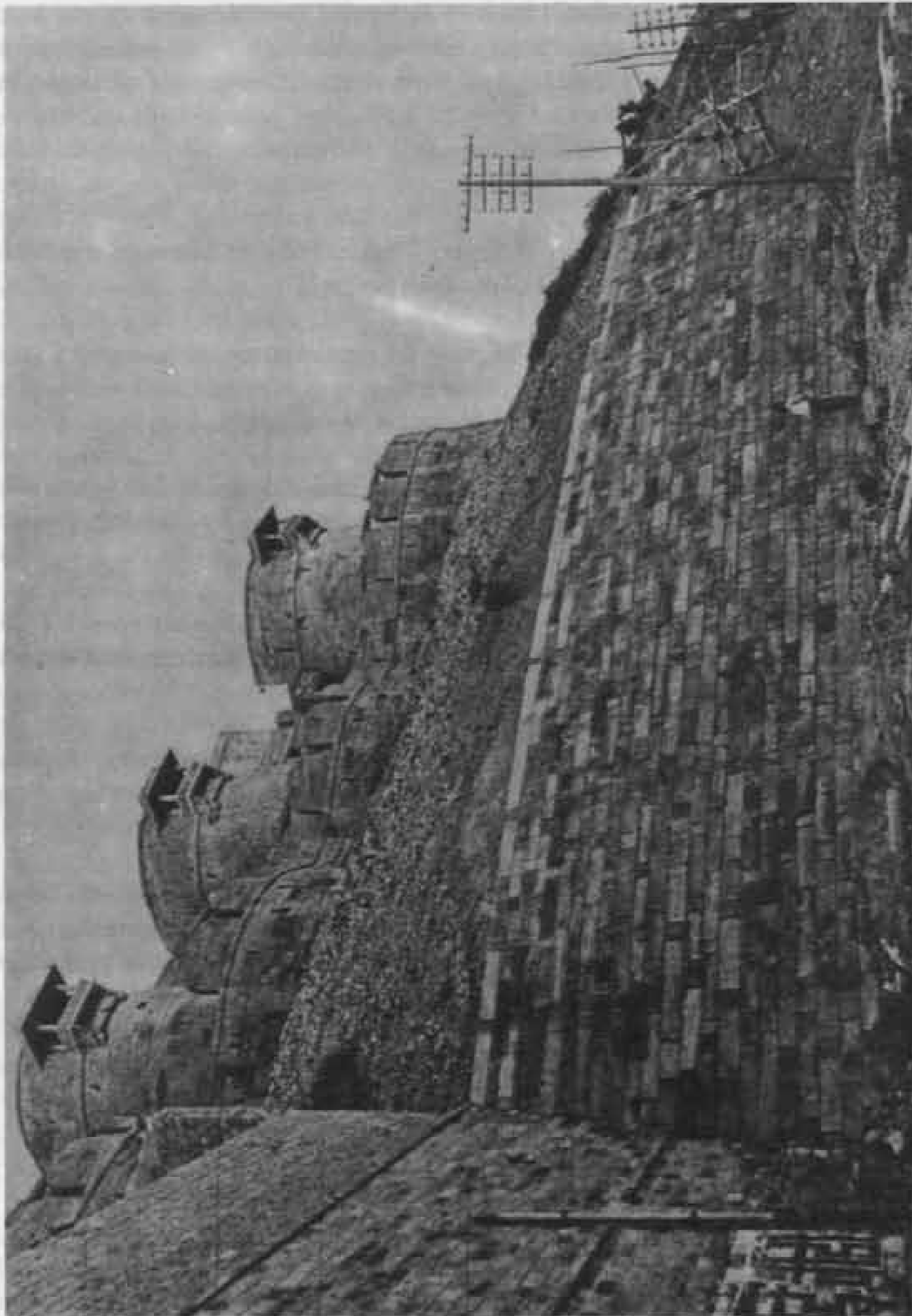
78. Gingee: Venkataramana temple, before conservation of *Kalyana mandapa*. *See page 253*



79. Gingee: Venkataramana temple, after conservation of *kalyana mandapa*. *See page 253*



80. Jaisalmer: Fort, before restoration of lower fortification wall. *See page 258*



81. Jaisalmer: Fort, after restoration of lower fortification wall. ***See page 258***

28. Buddhist Monuments, Sanchi, District Raisen.— The damaged, cracked and sunken cement concrete slabs of the approach road were replaced with fresh cement concrete slabs. Missing and damaged barbed wire fencing has been restored by providing angle iron posts. The broken and cracked railing stones of Stupa 1 have been joined with araldite and the top watertightened. Replacement of broken, damaged and missing Gupta style brick-tiles of floor of Monastery 51 is in progress.

29. Nagina-Mahal, Khimlasa, District Sagar.— Restoration of damaged and fallen pillared pavilion and watertightening the roof and dome is in progress.

30. Mahadeo Temple, Pali, District Sagar.— In continuation, of last year's work *(1983-84,* p. 207), the construction of a random rubble masonry compound wall with cement mortar has been completed and angle iron door and barbed wire fencing on iron angle posts provided.

31. Badal Mahal, Rahatgarh, District Sagar.- In continuation of last year's work *(1983-84,* pp. 207-208), the damaged stone masonry wall was restored by erecting temporary stone masonry support to the high roof.

32. Temple, Ashta, District Seoni.— In continuation of last year's work (*1983-84,* p. 208), the work of providing and fixing flagstone flooring to the platform and watertightening of the *sikhara* is in progress.

33. Gadarmal Temple, Badohpathari, District Vidisha.— Repairs to approach steps, watertightening the *sikhara* and enclosing the area with barbed wire fencing on angle iron posts are in progress.

34. Jaina Temple, Badohpathari, District Vidisha.— In continuation of last year' work *(1983-84,* p. 208), the collapsed dome and damaged and bulged out enclosure walls of the sanctum of the main shrine were restored with coarsed rubble masonry in lime mortar mixed with cement. The top was watertightened for arresting the seepage of rain water.

35. Sarai, Raverkhedi, District West Nimar.- In continuation of last year's work *(1983-84,* p. 208), the damaged steps of the *Chhatri were* repaired and watertightened. The enclosed area was provided with barbed wire fencing on angle iron posts.

Delhi Circle

DELHI

36. Asokan Pillar, Delhi.- The work of providing R.R. Masonry compound wall around the pillar and a pipe railing over it is in progress.

37. Chauburji Masjid, Delhi.— The work of underpinning and also pointing in lime cement mortar over the arches of the chambers on the first storey of the Masjid has been completed. The work of providing a compound wall in R.R. Masonry is in progress.

38. Jami-Masjid, Delhi.- In continuation of last year's work *(1983-84,* p. 208), the decayed red sandstones in veneering moulded cornices, *chhajjas* and battlements were replaced with new stones after proper dressing and carving.

39. Qudsia Masjid, Delhi.— The work of underpinning of *lakhauri* brick masonry and plain and ornamental plaster work over the facade and side walls including pointing in lime cement mortar is in progress.

40. Roshanara Baradari, Delhi.— The cracked roofing slabs over the verandah has been replaced and the terrace over it re-laid with fresh lime concrete. The work of restoration of ornamental flooring over the platform in Mughal *lakhauri* bricks is in progress.

41. Asokan Rock-edict, New Delhi.— The work of providing R.R. Masonry wall along the outcrop of the hill was taken up and it is in progress.

42. Kotla Firoz Shah, New Delhi.— The work of underpinning and restoration in R.R. Masonry has been carried out on the three sides (eastern, northern and southern) of the fortification wall. The wall on the south-east comer near the mosque was watertightened. The open joints of the enclosure and its outer fortification wall have been rendered watertight by pointing with lime cement mortar.

43. Purana Qila, New Delhi.- In continuation of last year's work *(1983-84,* p. 209), the reconstruction of the collapsed fortification wall in random rubble masonry is in progress and the surface of the wall has been recess pointed with lime cement mortar (Pis. 60-61).The work of reproducing the missing arches and the vaulted roof is in progress.

44. Sher Mandal, Purana Qila, New Delhi.— The decayed concrete over the lower plat form was dismantled and re-laid with fresh lime cement concrete.

45. Qila Rai Pithora, New Delhi.— The missing portion of C.R. Masonry has been restored after exposing the dumped masonry and resetting the loose and hanging stones.

46. Sultan Ghari's Tomb, New Delhi.— The reconstruction of dome and resetting of the pillars has been taken up and the work is in progress.

47. Tin-Burji, New Delhi.— The outer walls have been pointed with cement mortar, and the soffits of the dome have been plastered. The restoration of damaged arches of the chamber is in progress.

48. Wazirabad-Masjid, New Delhi.— The lime concrete over the terrace of the main prayer chamber has been laid to check the leakage of water.

Eastern Circle

ORISSA

49. Dakshya Prajapati Temple, Banpur, District Puri.— Fallen and damaged outer and inner compound walls were repaired. The damaged stone flooring around the temple was also attended by providing new flagstones.

50. Lingaraja Temple, Bhubaneswar, District Puri.— Parts of stone flooring on the north east portions of the temple compound was repaired by renewing and replacing the weathered stone blocks of the pavement.

51. Chausath Yogini Temple, Hirapur, District Puri.— The joints of the entire structure were raked and pointed with suitable mortar after clearing the vegetation, etc. The area around the structure was also provided a 1.50 m wide red *morum* apron, besides pointing and water-tightening the structure.

52. Sun Temple, Konarak, District Puri.- The flight of steps on the eastern side was repaired and the work of widening the approach road has also been done. A rope barricade around the structure was also provided.

53. Jagannatha Temple, Puri, District Puri.— The wornout and decayed members of an arch have been restored. The work of lime plastering on the walls of Gajandharana Besha (House) has been completed along with the renewing of the womout wooden frames and engraving broad outlines of ornamented pieces.

54. Caves, Udaigiri, District Puri.- The entire protected area of Udaigiri hill was brought under fencing by providing a barbed wire supported by angle iron posts.

WEST BENGAL

55. Ancient Temple, Bahulara, District Bankura.- The damaged retaining wall of the plinth on the northern and western sides and the flooring of the *sabha-mandapa* were repaired. Small stupas on the southern side were pointed, watertightened and cleared of vegetations.

56. Kala-Chand Temple, Bishnupur, District Bankura.—Portion of the retaining wall of the platform on the south of the temple was raised and the damaged approach steps repaired.

57. Shyam Rai Temple, Bishnupur, District Bankura.— Damaged and decayed plaster at various points were removed and replastered, and the dead lime concrete from the roof has also been removed and replaced with fresh ones.

58. Palace, Cooch Behar, District Cooch Behar.—The jungle growth on and around the palace was cleared. Roots penetrating deeper in the structure and damaging it were taken out by opening parts of the walls and mended suitably.

59. Hansesvari and Vasudeva Temple, Bansberia, District Hooghly.— The deep rooted vegetations on the top of the temple were removed by opening at various points. The dead lime concrete have also been cleared off from the roof and watertightened.

60. Group of temples (known as Brindaban Chandra's Math), Guptipara, District Ho oghly.— The collapsed inner portion of the north-western wall of the temple was repaired and whitewashed. The jungle growth on the outer boundry wall was also cleared.

61. Adina Mosque, Pandua, District Malda.— The top of the western wall of the mosque including the south-west comer was made watertight. The decayed floor concrete on the southern portion was also attended by relaying with lime concrete.

62. Chika Masjid, Gaur, District Malda.— The dead lime concrete on the top of the arched roof was removed and fresh lime concrete relaid.

63. Dakhil Darwaza, Gaur, District Malda.— The dead lime concrete on the top of the arched roof was removed and fresh lime concrete applied.

64. Residency Cemetery, Babulbona, District Murshidabad.— The broken portions of the compound wall were suitably repaired and vegetation growths cleared.

65. Hazar Duari Palace, Murshidabad, District Murshidabad.— The damaged portions of the drain running around the palace were repaired by providing similar brick tiles and then plastered with lime *surkhi* mortar.

66. Madina Mosque, Hazar Duari, Murshidabad, District Murshidabad.— The pathway leading to the Mosque was re-laid suitably by providing brick-edging and *morum.*

67. Imambara, Hazar Duari, Murshidabad, District, Murshidabad.— The damaged surface of the first floor on the eastern side of Imambara was re-laid and re-plastered.

68. Tomb and Mosque of Murshidkuli Khan, Sabjikatra, District Murshidabad.— Two cells were provided with lime concrete flooring. Smaller domes on the southern surrounding chambers and arches on the top of the north-west minaret were repaired and given proper shape.

Mid-eastern Circle

BIHAR

69. Ancient Stupa, Antichak, District Bhagalpur.- The basement wall of the Stupa was made presentable by watertightening and pointing.

70. Excavated Remains, Nalanda, District Nalanda.— For the safety of the stucco figures fixed in the niches of Temple 3, a high barbed wire fencing was provided and the stucco figure of a seated Buddha partially re-modelled was re-fixed in its original place. The south-eastern tower of Temple 3 was also rendered watertight by resetting the dilapidated portions and finished with recess pointing.

71. Ancient Remains, Rajgriha (Old and New Rajgriha), District Nalanda.— The work of providing barbed wire fencing around the acquired area of Veerayatan was taken up.

72. Excavated Site (Palace of Asoka), Kumrahar, District Patna.— To regulate and segregate the in-coming and out-going heavy rush of visitors to the site, wire net framed in G.I. pipe pannels, M.S. Gates and G.I. pipe railings were provided.

73. Tomb of Shah Makhdum Daulat Maneri, Maner, District Patna.— Structural remains of the water tank on the south of the Tomb were repaired.

74. Hasan Sur Shah's Tomb, Sasaram, District Rohtas.- The weathered brick-on-edge apron circumambulating the tomb was dismantled and reconditioned by laying flagstones paved on lime concrete sub-base and finished with pointing and stone edge binding. Besides the lime concrete floor verandah was reconditioned after dismantling the decayed one. The decayed plaster was also removed from some of the *cupolas* and re-laid with fresh lime *surkhi* plaster beaten to compaction matching with the original.

UTTAR PRADESH

75. Khusru Bagh, Allahabad, District Allahabad.- The fallen portion of the eastern enclosure wall was rebuilt of random rubble masonry laid in cement lime mortar.

76. Gateway, Khusru Bagh, Allahabad, District Allahabad.- Lime concrete on the 1st and 2nd floor was reconditioned and replastered after removing the decayed ones.

77. Excavated Remains, Sringaverapura, District Allahabad.— Inlet and outlet channels of Tank A and B were covered with alkathene sheets to prevent damages from rains. The earthern sub-strata underlying the brick masonry structure were rejuvenated by providing a lime concrete shell to prevent undercuts due to accumulated tank water.

78. Stupa and Monastery, Piprahwa, District Basti.— The acquired area was provided with boundary walls in brick masonry.

79. Buddhist Remains, Kushinagar, District Deoria.— In continuation of the previous year's work *(1983-84,* p. 212) the restoration and watertightening of Nirvana stupa was further taken up. The plastering work was also completed. The Ramabhar Stupa was also watertightened.

80. Shuja-ud-Daula's Tomb, Gulabari, District Faizabad.— The floor of the northern verandah of the tomb was reconditioned by laying fresh lime concrete after removing the dead ones.

81. Firoz Shah's Tomb, Jaunpur, District Jaunpur.— The openings of the site was enclosed with M.S. Grills.

82. Jhinjhri Mosque, Jaunpur, "District Jaunpur.— The openings of the mosque were provided with M.S. Grills to check trespassing of anti-social elements.

Mid-Southern Circle

KARNATAKA

83. Fort, Gateways and Dungeon, Bangalore, District Bangalore.— The fallen portions of the southern fort wall were reconstructed as per the original and the parapet wall in brick was constructed and plastered suitably.

84. Kalleswara Temple, Hirehadagali, District Bellary.— Bulged portions of the *sikhara* were dismantled without disturbing the inner veneering and the reconstruction of the same is in progress. The missing architectural members were replaced with the available ones lying in the vicinity. The foundation of the superstructure was strengthened by laying a cement concrete bed (Pis. 62-63).

85. Ganigitti Jaina Temple, Kamalapuram, District Bellary.— The accretionary supporting pillar given to the broken beam in the *mukhamandapa* was removed after strengthening the beam by inserting an I-section girder.

86. Krishna Temple, Krishnapura, District Bellary.— The broken beams on the southern side of the main entrance were strengthened by inserting I-section girders.

87. Surya-narayana Temple, Magala, District Bellary.— The roof of Siva, Nandi and Surya-narayana shrines and the *navaranga* was watertightened by laying a fresh *jelly* concrete after removing the dead ones. The dislodged parapet wall around the main temple was reconstructed. The monument was fenced on eastern, northern and southern sides, and a retaining wall in stone masonry was constructed to withstand the earthern embankment on the north side.

88. Huchimalligudi, Aihole, District Bijapur.— The joints in the stones of the roof of the temple were grouted and watertightened after providing missing hood stones. An apron of stone slab was provided around the temple.

89. Rock-cut Caves, Badami, District Bijapur.— The construction of underground drain in front of the Caves 3 and 4 to prevent stagnation of rain water is in progress.

90. Asar Mahal, Bijapur, District Bijapur.— The womout teakwood planks in the painted chamber on the first floor of the monument were replaced with new ones and the roof was rendered watertight.

91. Golgumbaz, Bijapur, District Bijapur.— The dead plaster on the inner wall of the dome on the eastern side was removed, and replastering with combination mortar is in progress.

92. Ibrahim Rouza, Bijapur, District Bijapur.— The dislodged and loose stone slabs of the vaulted roof of the *dalans* were removed and reset.

93. Basavannadeva Temple, Hallur, District Bijapur.- The joints in the stones of the roof of the temple were grouted and pointed with cement mortar. The roof of the *nandimandapa* was laid with a fresh *buck-jelly* concrete to watertighten it. The low level area around the temple was levelled by filling earth and a drainage was provided on the western side to drain out the storm water.

94. Papanatha Temple, Pattadakal, District Bijapur.- The roof of the temple was watertightened after replacing the damaged and missing hood stones. A reinforced glass shutter was provided to the skylight opening.

95. Amritesvara Temple, Amritapur, District Chikkamagalur.— The overhanging roof slabs of the northern entrance *mandapa* were reset to their original position and the missing ones were replaced. The roof of the *mandapa* was rendered watertight after replacing the broken

beam and the missing veneering slabs of the outer wall were also replaced with plain ones. The eastern and southern sides of the monument were fenced. The plinth of the *prakara* wall was exposed on the exterior during a levelling operation.

96. Vidyasankara Temple, Sringeri, District Chikkamagalur.— The cracks in the *sikhara* of the temple were grouted to arrest leakage of water. The joints in the *jagati* were also pointed with cement mortar. Flagstone pavements were provided in front of the temple.

97. Mukteswara Temple, Chaudedanpur, District Dharwad.— The missing stone slabs of the roof of the Veerabhadra shrine in Mukteswara temple complex were replaced with new ones and the roof was watertightened. A parapet wall was constructed as per the original.

98. Kesava Temple, Belur, District Hassan.— The northern side of the *prakara* wall was strengthened by underpinning with stone masonry and concrete. An information counter was constructed in front of the temple.

99. Lakshmi Devi Temple, Doddagaddavalli, District Hassan.— The accretionary lime wash over the walls of the Lakshmidevi shrine was removed and the sunken *navaranga* flooring was levelled. The protected area around the monument was fenced after levelling.

100. Hoysalesvara Temple, Halebid, District Hassan.— The southern and eastern sides of the monument were completely fenced with M.S. angles and barbed wire. On the western side a toe wall measuring 60 cm in height was constructed. Flagstone pavement in front of the entrance steps on the northern side was provided to avoid stagnation of rain water. A water tank in brick masonry was built to provide drinking water to the visitors.

101. Kedaresvara Temple, Halebid, District Hassan.- Resetting of the dilapidated entrance of the *mandapa* is in progress.

102. Buchesvara Temple, Koravangala, District Hassan.— The uneven ground around the monument was levelled. Dry pitching was done along the road side to avoid land erosion. On the eastern side, a compound wall with a single grill over it was constructed and provided with an iron gate, and three other sides were fenced with barbed wire. New wooden doors were fixed to the main Suryanarayana shrine.

103. Lakshmi—narasimha Temple, Nuggehalli, District Hassan.— Watertightening the roof of *nandi mandapa* and the *pakashala* is in progress.

104. Sadasiva Temple, Nuggehalli, District Hassan.— Wooden doors were fixed to the *navaranga* and *nandimandapa.*

105.KattaleBasti, Sravanabelagola, District Hassan.- The overhanging roof slabs of the *garbha-griha* were dismantled and reset by providing new slabs wherever necessary and the roof was rendered watertight.

106. Lakshmi—narasimha Temple, Marehalli, District Mandya.— In order to drain out rain water, box drains were constructed between the *mukhamandapa* and *mahadwara.*

107. Kesava Temple, Nagamangala, District Mandya.— The broken corbels in the *mahamandapa* were replaced with new ones and the work of watertightening the roof after removing the dead concrete, is in progress.

108. Gumbaz, Srirangapatna, District Mandya.— The damaged plaster over the superstructure of the Khan-Khana was removed and replastered, and the walls were provided with waterproof cement coat. The damaged *chhajja* was restored.

109. Jumma Masjid, Srirangapatna, District Mandya.— The minarets and the superstru cture were applied with two coats of waterproof cement paint after removing moss and lichen. The damaged portion of the front wall on either side of the main entrance was replastered. The damaged portion of the floor in between the main entrance and the guardroom was relaid.

110. Srikantesvaia Temple, Nanjangud, District Mysore.— The damaged stucco figures of the southern parapet were mended and strengthened by filling cracks and was applied with a coat of waterproof cement toned suitably to match with the original. The accretionary mud walls around the Subramanya and Onkaresvara sub-shrines were dismantled and reconstructed in stone slabs to match with the adjoining structures. The damaged plaster over the roof of the *mahamandapa* was removed and replastered. The work of removing the electrical batteries on the *mahadwara gopura* is in progress.

111. Keertinarayana. Temple, Talkad, District Mysore.— The work of relaying fresh Concrete over the roof and strengthening of the broken beams in *mahadwara mandapa* by inserting I-section girders is in progress.

112. Virupaksha Temple, Bhatkal, District North Kanara.- Repairs to the roof of the. temple on the northern, southern and eastern sides are in progress.

113. Somesvara Temple, Bandalike, District Shimoga.— Reconstruction and resetting of the fallen and dislodged portions of the *navaranga* on the northern side is in progress.

114. Panchakuta Basti, Humcha, District Shimoga.- The concrete over the roof of the *mandapa* was removed and re-laid with brick *jelly* (concrete) as per the original. The sunken floor of the *mukha-mandapa* was removed and resetting is in progress. The sculptured panels

which were used as floor slabs were removed to a safer place. The work of replacing the broken Mangalore tiles is in progress.

Northern Circle

UTTAR PRADESH

115. Fort, Agra, District Agra.— The restoration work of obliterated and decayed geometrical and floral ornamentations, encrusted in stucco, on the eastern wall of the first room of Sheesh Mahal, has been carried out with special lime mortar. The missing and decayed convex glass mirrors were also replaced. The eastern outer defence wall of Diwan-i-Khas was taken up for repair. Loose and damaged veneering red sandstones were reset and replastered with new ones (Pis. 64—65). The womout masonry work was underpinned and open joints pointed. The decayed lime plaster on walls and ceilings of the rooms on south, west and north sides of Angoori Bagh was removed and restoration work executed. The womout masonry work of Akbari Mahal was underpinned and open joints pointed. Walls of the rooms at the 2nd floor of Moti Masjid were plastered in patches and missing veneering stones with moulded and carved designs on the northern facade were restored. Worn out steps at the southern side of Delhi gate and the decayed masonry of the side walls of the steps were repaired and under pinned. The fallen portion of the wall of Mina bazar was restored and decayed masonry under pinned.

116. Taj Mahal, Agra, District Agra.— The walls, ceilings and rooms embodied the marble terrace were repaired and replastered with lime mortar in patches and the cracks were grouted with lime cement. The cracked marble plaster having mouldings and inlay works on the southern facade of the mausoleum was replaced with new ones (Pl. 66-67). The womout lime plasters from walls and ceilings of room on the south-east of the mausoleum were removed and replastered. The top of the rooms at the eastern side of Glass Nursery in the south-western comer of Taj Mahal were watertightened with fresh lime concrete. Dalans of the north-western quadrangle at forecourt were repaired by replastering the walls and ceilings. The broken and missing *chhajja* stones were replaced. The repair work in the south-western minaret of Taj Mahal was further carried out by providing missing inlay bars on its outer surface.

117. Akbar's Tomb, Sikandra, District Agra.— The repair works of *cupolas at* the 2nd storey of the mausoleum, at its eastern and western facades and south-western comer, were done. Bulged portions and womout sandstone brackets, lintels and railings and broken mould ed brackets, stone *jalis,* were replaced and reset with new ones. The open joints of red sand stone pillars, arches and walls were pointed.

118. Itimad-ud-Daula's Tomb, Agra, District Agra.— The worn out brickwork on the southern side of the compound wall of the tomb was underpinned in patches.

119. Firoz Khan's Tomb, Agra, District Agra.- Worn out lime plaster of the dome was removed, replastered and watertightened. The terrace around the tomb was also watertig-htened by providing fresh lime concrete. The womout brickwork of the compound wall and rooms below the terrace of tomb were underpinned, and recessed pointing in the open joints was also done. The entrance gateway of the tomb was provided with a Mughal pattern door.

120. Group of Monuments, Fatehpur Sikri, District Agra.- Broken moulded brackets and lintels in red sandstone of the Zanana Rauza were replaced and the sandstone slabs of the roof towards its north were reset. The broken and missing carved *dasa* and veneering stones of the octagonal well on the west side of Buland Darwaza of the Jami Masjid were replaced with new ones. The damaged and fallen rubble masonry in *dalan* and the parapet were restored at some places. The roof of Turkish Sultana's house was watertightened in patches and a ledge was provided to stop the leakage of water. Open joints of the ceiling and side walls of the verandah, on the right side of Nagina masjid were also pointed. The open joints of veneering stones of Daftar Khana were also pointed and the wall around was provided with lime concrete apron and missing *chhajjas* replaced.

121. Excavated Remains, Fatehpur Sikri, District Agra.— The accumulated debris and architectural members in front of the shops and cells of the Bazar complex were removed and cleared, and missing portions and decayed stone masonry restored and underpinned (Pis. 68-71). The worn out structures were provided with recess pointing. In order to drain off rain water from the complex, a culvert was built with a channel running towards a village.

The fallen compound wall of Char Suq on the south-west sides was restored. The walls of the cells were underpinned and recessed pointing was done. Top most portions of certain walls were watertightened.

The coarsed rubble masonry walls of Khushboo Khana were underpinned. Foundation walls of central structures with furnaces and cisterns were restored. Lime concrete was laid out on the floors, and the work of edging and recessed pointing were executed.

Exposed walls of the Atish Khana were repaired by underpinning, edging and recessed pointing and the walls rebuilt at certain places.

The worn out plaster on the east, west and south of the plinth of the platform of Ibadat Khana was restored and edging and recessed pointing were also done. Missing stones of steps at three sides were restored. The restoration, edging and recessed pointing of the steps was also taken up.

Soak pits, furnaces, cisterns, latrine blocks, bathing tanks, hypocausts, bathrooms, and other attached apartments near treasury were also taken up for repairs and restoration. Loose stones were reset. Missing portions of exposed structures was removed and replastered. Underpinning, edging and recessed pointing to the exposed foundation walls were also taken up.

122. Kalinga Monuments, Dehra Dun, District Dehra Dun.— Compound wall was constru cted to check encroachment.

123. Mosque and Sarai, Khudaganj, District Farrukhabad.— Collapsed and worn out portion of the back wall of the mosque were rebuilt and underpinned. The inside floor and front platform of the mosque were provided with lime concrete floor and the inner surface of walls replaced after removing the decayed lime mortar.

124. Chaurasi Gumbaz, Tomb of Lodi Shah Badshah, Kalpi, District Jalaun.— Arches and walls of bays at south-east and north-east sides were replastered by reproducing mouldings matching with the original.

125. Jarai-ka-Math, Barua Sagar, District Jhansi.— The compound wall of the temple was repaired and the lower portion of the inner wall strengthened.

126. Asaf-ud-Daula's Imambara, Lucknow, District Lucknow.— The repairs to the first and second entrance gateways of the Imambara was taken up. The roof of the room on the east side of the 1st forecourt has been watertightened.

The restored parapet on the southern facade of the western wing of the 2nd gateway was plastered by reproducing mouldings on pillars, niches and on cusped arches as per original.

127. Rumi Darwaza, Lucknow, District Lucknow.—Worn out lime concrete floor inside the mosque was repaired and moulded geometrical designs over the stucco on the inner side of the wall and pillars reproduced.

12& Jama Masjid, Hussainabad, Lucknow, District Lucknow.—Worn out lime concrete floor inside the mosque was repaired and moulded geometrical designs over the stucco on the inner side of the walls and pillars reproduced.

129. Excavated Site, Kankali Tila, Mathura, District Mathura.— To prevent encroachment and entry of cattle, the site was fenced with barbed wire.

130. Mosque and Tomb of Shah Abdul Razzak and His Sons, Jhinjana, District Muzaffarnagar.—Worn out lime plaster on the inner surfaces of walls of the mosque and compound wall were removed and replastered with lime concrete. Floors both inside and outside of the mosque were repaired by providing fresh lime concrete.

North - western Circle

HARYANA

131. Ancient Site, Banawali, District Hissar.— The excavated structures of the Harappan

times were filled up with earth to prevent damage to the structures and erosion of the sections.

132. Prithvi Raj Chauhan's Fort, Hansi, District Hissar.- Structural stability of the entrance gate of the fort was improved by earth filling of the rain gulley caused by gushing rain-water and erosion of soil adjoining the gateway which stands on an ancient mound.

133. Firoz Shah's Palace, Hissar, District Hissar.- The filled earth and accumulated debris were cleared from the cells adjoining the gateway of the palace. The random rubble stone work with weak and dead mortar was also dismantled and the walls reconstructed in cement lime mortar.

134. Shaikh Chilli's Tomb and Madrasa, Thanesar, District Kurukshetra.— The brickwalls of the leaking water tank in the centre of the courtyard of the *madrasa* were dismantled and reconstructed in country brick masonry in cement lime mortar. Lime concrete was also laid on the top of four walls which form the platform around the water tank. The walls and the platform were also watertightened to prevent percolation of water.

HIMACHAL PRADESH

135. Chamunda Devi Temple, Chamba, District Chamba.— Slate-stone flooring was laid on the lower terrace of the temple to check seepage of water and erosion of soil on the hill slope. Steps with rubble stonework were also provided for proper approach to the upper terrace of the temple.

136. Lakshmi-narayana Group of Temples, Chamba, District Chamba.— The broken slate-stones and decayed wooden members of the *chhatri* of the *sikhara* of the Chitragupta temple were dismantled and rebuilt by providing new deodar wood and slate-stone.

137. Fort, Kangra, District Kangra.— A portion of the fallen out retaining wall of the path way leading from the gate at the foot of the hill to the top of the fort was restored in coarsed rubble stone work in cement lime mortar.

A part of the cracked and out-of-plumb parapet wall on the river side was reconstructed matching with the original stonework for the safety of the visitors and astray cattle. Under-pinning of the retaining wall was also done in order to check any possible collapse of the structure.

138. Buddhist Monasteries, Tabo, District Lahaul and Spiti.— Decayed wooden rafters and beams and overburden of earth on the leaking roof of the Chamba Chinpo Lhakhang were removed after dismantling the members very carefully to avoid any damage to the paintings on the inner walls. The roof was rebuilt using new deodar wooden members, beams,

rafters and planks. It was further finished by providing fresh earth, alkathene sheets, spraying of hot solution of K.oil and bitumen to prevent leakage of water from the roof. The top of the roof was also provided with mud plaster mixed in cowdung and hay.

139. Ardhanarisvara Temple, Mandi, District Mandi.— The leaning and dislodged front wall with entrance gate of the *mandapa* of the temple was dismantled and rebuilt with original ornamental and moulded stones in conformity with the original stonework. Base concrete was also provided in the foundation of the wall to check sinking of the wall of the temple which stands on the loose earth of the hill terrace.

140. Trilokinatha Temple, Mandi, District Mandi.— In continuation of previous year's work *(1983-84,p.220),* the restoration of the fallen retaining wall on the bank of the river Beas was taken up to a height of 8m in coarsed rubble stonework in cement mortar. The work is in progress.

JAMMU AND KASHMIR

141. Datha Mandir, Bandi, District Baramula.— The open joints of stonework of the temple walls, platform and flooring were provided with concrete cement lime mortar after raking and washing out the joints thoroughly. The holes, hollows and other voids and cavities in the walls were also filled with concrete mortar. Dislodged stones were also reset after removal of vegetation growth.

142. Avantisvami Temple, Avantipur, District Pulwama.— The missing stone flooring of the temple was restored with large sized stones in cement lime mortar matching with the original stonework after removing the accumulated earth and debris and proper dressing of the bed. The work is in progress.

143. Ancient Temple, Lodu, District Pulwama.— The protected area of the temple has been fenced with angle iron posts and chain link mesh to stop entry of cattle and to prevent encroachments.

144. Sankaracharya Temple, Srinagar, District Srinagar.— The dislodged and out-of-plumb stone blocks of the railing on either side of the flight of steps leading to the temple were reset in cement lime mortar.

145. Ancient Buddhist Site, Harwan, District Srinagar.— The work of reclamation of the buried ancient structures was continued *(1983-84,* p.221) and the pavement with decorated brick tiles was exposed after removing the fallen debris and large sized boulder stones, gravel and earth. The huge boulder stones were broken by a heating-and-cooling method to avoid damages to valuably inscribed tiles of the pavement.

146. Pathar Masjid, Zainakadal, Srinagar, District Srinagar.- Ornamental and moulded plaster of the dome ceiling was redone after scraping modern cement plaster and distempered colour wash. The plaster work was rendered with toned lime mortar to match with the origin al plaster.

147. Parimahal, Srinagar, District Srinagar.— Missing stone masonry of the arches of the *baradari* and retaining walls of the first terrace was restored in conformity with the original and the stonework was pointed with toned lime mortar to match with the original. Steps were also provided with rubble stone work on the outer side of the terraces to connect the approach-hes wherever these were missing.

148. Dera Temple, Babore (Manwal), District Udhampur.— The bulged out and dislodged stones walls on the northern and eastern sides of the temple were dismantled and reset very carefully with ornamental and moulded original stones.

149. Devi Bhagwati Temple, Babore (Manwal), District Udhampur.— The dilapidated ashlar stonework of the walls and platform of the ancient well adjacent to the Devi Bhagavati temple were dismantled and a portion was reset with original ornamental and moulded stones in cement Lime mortar with an admixture of pigment to match with the original work after providing base concrete in the foundation. Base concrete was also provided in the compound of the temple for laying stone flooring. The works are in progress.

150. Temple 5, Krimchi, District Udhampur.— The partly collapsed and highly dilapidat-ed superstructure of the temple was taken up for repairs for the first time after the taking over of the monument by the Survey. Nearly more than half of the structure of the temple had collapsed earlier a long time back—right from its base to the top of the *sikhara* and it was in imminent danger of further collapse as the stones were hanging precariously. The space in the sanctum and the *sikhara* was first filled with gunny bags with earth-filling as a precautionary measure before dismantling the dislodged ornamental and moulded stones blocks of the temple. The stone work has been reconstructed in original ornamental moulded stones and new stone blocks with ornamental and moulding work replacing the missing and weathered stones. The work of dismantling and taking out of the weathered stones was done very carefully. The holes, hollows and other voids and cavities in the stonework were filled with concrete mortar after removing vegetation growth and raking and washing out the holes thoroughly. The joints in stone-work were also recess-pointed after grouting with liquid mortar into the holes and hollows.

The accumulated and fallen debris mixed with temple stones, gravel and earth was also removed from all the four sides of the temple and the buried stone flooring, the compound wall and the hidden portion of the temple structures was exposed after excavating the debris. The stone blocks of the temple were salvaged from the debris after sorting out and stocking the serviceable materials. The work is in progress.

151. Temple l. Krimchi, District Udhampur.- The out-of-plumb and bulged out walls of the high platform of the temple which also serves as the retaining wall and compound wall was dismantled and reconstructed using the original ashlar stone blocks set in cement lime mortar after providing base concrete to check sinking of the loose soil of the terrace of the temple. New stones were also used in place of the missing ones after dressing and matching with the original stonework. Stone boulders salvaged from the site and fresh boulder stones from the *nullah* bed were also used in the core of the wall as a measure of economy in the construction of the wall while dressed stones were used on the outer surface of the wall as per original.

152. Fort of Raja Suchet Singh, Ramnagar, District Udhampur.— The decayed and rotten wooden lintel of one of the large-sized doors was removed and R.C.C. lintel was provided in its place as a permanent measure for the structural strength of the high and thick inner forti fication wall. Fallen out stonework of the wall on the sides and above the lintel of the doorw-ay was also restored.

The leaking roof of the main entrance gateway was water tightened by providing mud *phaska* and brick tiles.

153. Nawa Mahal, Ramnagar, District Udhampur.— Concealed R.C.C. roof slab was laid as a permanent measure after replacing the decayed wooden rafters and planks. The roof has been watertightened in order to save the paintings on the inner walls of the palace.

154. Purana Mahal, Ramnagar, District Udhampur.-- The decayed and damaged wooden rafters and planks of the leaking roof of the big *dalans* of the palace were removed and replac-ed by new deodar wooden rafters and planks; a concealed R.C.C. roof slab was laid to render the roof watertight. The cracked and dislodged stone brickwork of the walls was also repaired as per the original before laying the roof slab as a permanent measure.

155. Sheesh Mahal, Ramnagar, District Udhampur.— The roof of the painted hall was given a finish with lime concrete on the R.C.C. roof slab and parapet to match with the origin al surface.

A portion of the cracked and dislodged retaining wall with bastions and ornamental plaster-work on the front terrace of the palace was reconstructed as per original after disman-tling the effected portion and providing base concrete in the foundation. The work is in prog-ress.

PUNJAB

156. Fort, Bhatinda, District Bhatinda.— The damaged and sunken brick pavement on the southern rampart of the fort was repaired by filling in the depression and the deep cavity with earth and consolidating it by watering and ramming. The surface was provided with brick

pavement over bed concrete in order to watertighten the structure of the high fortification wall. Some of the fallen out patches of brickwork were also restored on the outer side after removal of rank vegetation.

157. Anarkali, Batala, District Gurdaspur.- The repairs to this monument, which is also called as the Baradari, standing on a high plinth in the centre of a large stepped water tank was taken up for repairs for the first time after its protection. To begin with, the work of removal of accumulated debris and rank vegetation was taken up. An approach to the Baradari from its bank of the marshy and waterlogged bed of the tank was provided by making a 2m wide embankment.

158. Shamsher Khan's Tomb, Batala, District Gurdaspur.— Damaged and dislodged barbed wire fencing of the monument was repaired and iron work painted. An additional steel gate and turnstile was also provided on the northern side of the protected area for the entry of visitors.

Southern Circle

KERALA

159. Siva Temple, Chemmanthitta, District Trichur.— The damaged tiles of the roof and decayed wooden members supporting the roof were replaced as per the original. The work is in progress.

160. Fort, Anjengo, District Trivandrum.— The leaky roof of the comer bastion was watertightened. The western entrance to the fort was provided with a wooden door.

TAMIL NADU

161. Iravatanesvara Temple, Kanchipuram, District Chingleput.— The damaged and rusted barbed wire fencing was replaced besides painting the wooden members.

162. Javaraharesvara Temple, Kanchipuram, District Chingleput.— The wooden door and iron gate were painted after scraping the old surface.

163. Kailasanatha Temple, Kanchipuram, District Chingleput.— The wooden door and iron gate were painted after scraping the rusted surface.

164. Matangesvara Temple, Kanchipuram, District Chingleput.— The damaged and rusted barbed wire fencing was replaced by new ones.

165. Muktesvara Temple, Kanchipuram, District Chingleput.- After encountering the old surface, gravelling the area around the temple was done.

166. Piravatanesvara Temple, Kanchipuram, District Chingleput.—Repairs to the damaged and rusted barbed wire fencing by replacing with new ones wherever necessary were done. Gravelling the area after picking up the old surface and painting the iron grill gate after scrap ing the old surface were attended to.

167. Vaikunthaperumal Temple, Kanchipuram, District Chingleput.— The sculptured panels on the *prakara* wall were cleared from dust and stains. The wooden members and iron gates were painted.

168. Arjuna's Penance, Mamallapuram, District Chingleput.— Gravelling the area in front, after cleaning and dressing the old surface was completed.

169. Five Rathas, Mamallapuram, District Chingleput.— The damaged and rusted barbed wire fencing was replaced with new ones.

170. Mahisamardini Cave, Mamallapuram, District Chingleput.— The damaged old gravel led surface in front of the monument was removed and re-filled with new gravels and consolidated

171. Olakanesvara Temple, Mamallapuram, District Chingleput.— Pipe railing over the basement was provided for the safety of the visitors going around the monument.

17.2. Varaha Cave, Mamallapuram, District Chingleput.— Gravelling the area in front of the monument after picking the old surface was done.

173. Tiger Cave, Saluvankuppam, District Chingleput.— The damaged posts and the rusted barbed wire were replaced with new ones.

174. Venkatesaperumal Temple, Tirumukkudal, District Chingleput.— In continuation of the previous year's work *(1983-84,* pp. 223-24), reconstruction of the dismantled sub-shrines of Andal(Pls. 72-73), Anjaneya and Kariamanikkapperumal was completed as per the original. The roofs of the above sub-shrines were watertightened and stone flooring was also laid. The Kalyana *mandapa* was provided with stone flooring. The damaged Madrasa terrace of the was repaired and reset in accordance with the original.

The accretionary walls in front of the *mandapa* of the main temple were removed and provided with an iron grill gate to ensure safety. The work is in progress.

175. Nityakalyanaswamy Temple, Tiruvidanthai, District Chingleput.— The undulated and sunken stone flooring of the 16-pillared *mandapa* was removed and reset in position. The

joints were pointed neatly. The terrace of the *mahamandapa* was provided with new plaster after removing the decayed mortar. The leaky terrace of the main shrine was watertightened with brick-*jelly* concrete.

176. Clive's Building, Madras, District Madras.— The work of removing the damaged plaster at various places has been taken up and the replastering of the same is in progress.

177. St. Mary's Church, Madras, District Madras.— The plaster on the interior walls of the church affected by saline action was raked out after documenting the position of the marble plaques fixed to the wall. The core brickwalls were washed with soft water by applying jet of water with pressure and the work of replastering of the same with specially made plaster is in progress.

178. Ranganathaswamy Temple, Erukkampattu, District North Arcot.— The dilapidated structure due to the growth of thick vegetation and fallen members was dismantled carefully. The work of reconstruction of the temple over a firm solid foundation is in progress.

179. Cholisvara Temple, Melpadi, District North Arcot.— In continuation of the previous year's work *(1983-84,* p.224) the reconstruction of the *prakara* wall over a firm foundation was completed. The roof was watertightened. The out-of-plumb stone *sikhara* and the south east comer of the main shrine were removed and reset in position.

180. Chandramoulisvara Temple, Nattery, District North Arcot.— In continuation of the previous year's work *(1983-84,* p. 224), the cloistered *mandapa* on the south-east comer of the temple was paved with flag stones over a bed of stone *jelly* concrete, and the *gopura* was also attended with brickwork as per the original (Pis. 74-75).

181. Rock-Cut Caves_, Siyamangalam, District North Arcot.— In continuation of the previous year's work *(1983-84,* p. 224) the dilapidated Kalyana *mandapa* was reconstructed as per the original. The top was provided with new ceiling slabs and the missing beams and roof watertightened. The debris around the *prakara* was removed and the hidden mouldings of the temple were brought to light.

182. Jalakantesvara Temple, Vellore, District North Arcot.— The work of removing moss and lichen and other accretions over the *gopura* and the *vimana* was taken up. The work of mending the broken portions of the stucco figures and strengthening the same is in progress.

183. Rock-cut Siva Temple, Kunnandarkoil, District Pudukottai.—The work of dismantling the leaky terrace was taken up and completed by watertightening the terrace with brick *jelly* concrete.

184. Monuments, Sittannavasal, District Pudukottai.— In continuation of the previous year's work *(1983-84,* p.225) the work of cutting the steps on the slope rock surface for easy access to the monument is in progress.

185. Rock-cut Cave Temple, Kunnakkudi, District Ramanathapuram.— In continuation of the previous year's work *(1983-84,* p.225) the broken ceiling slabs and beams were replaced with new ones and the roof watertightened.

186. Fort, Gingee, District South Arcot.— Reconstruction of the fallen portion of the fort wall of Krishnagiri with available stones and core filling with rubble in combination mortar has been completed (Pis. 76-77).

187. Venkataramana Temple, Gingee, District South Arcot.— The south-west bay of the Kalyana *mandapa* was provided with ceiling slabs wherever missing. Missing beams and capitals were also provided as per the original. The leaky roof of the Kalyana *mandapa* was watertightened with brick *jelly* lime concrete (Pis. 78-79).

188. Airavatesvara Temple, Darasuram, District Thanjavur.— The work of removing the damaged and weathered coarse of the leaky terrace on south and east portions of the *prakara* was taken up. The dislodged stone walls, ceiling slabs, beams, pillars and capitals of the south east portion of the corridor were dismantled after proper documentation. The work of laying stone *jelly* cement concrete to the foundation of the *prakara* area is in progress.

189. Brihadisvara Temple, Thanjavur, District Thanjavur.— The work of removing moss and lichens and other accretions over the main *vimana* and Raja *gopura* has been completed.

190. Brihadisvara Temple, Gangaikondacholapuram, District Tiruchchirapalli.— The work of dismantling the dislodged veneer stones after careful documentation was taken up and completed in accordance with the original.

PONDICHERRY

191. Varadarajaperumal Temple, Tribhuvanai, Pondicherry.— The moss and lichen over the stucco figures of the *vimana* was removed and a suitable preservative coat was applied as a water-proofing agent, besides strengthening the stucco figures.

South-eastern Circle

ANDHRA PRADESH

192. Virabhadraswami Temple, Lepakshi, District Anantapur.- Repairs to the damaged

temple and inner *prakara* wall were carried out.

193. Chennakesvaswamy Temple, Lower Fort, Chandragiri, District Chittoor.— Distorted and out-of-plumb stone walls of the *sikhara* were restored.

194. Fort, Chandragiri, District Chittoor.— Restoration of the fallen portion of the lower fort wall was carried out.

195. Rajamahal, Chandragiri, District Chittoor.— Restoration of ancient *chhajjas* and balconies was carried out.

196. Rani Mahal, Chandragiri, District Chittoor.— Ornamental stucco work on the eastern facade of Rani Mahal was restored.

197. Kodandaramaswamy Temple, Vontimitta, District Cuddapah.— The terrace of the main temple was watertightened.

198. Soumyanatha Temple, Nandalur, District Cuddapah.— Breaches in the *prakara* wall on its eastern side were restored.

199. Vaidhyanathaswamy Temple, Pushpagiri, District Cuddapah.- Watertightening the brick *sikhara* and stucco work of the mouldings were completed.

200. Group of Temples, Draksharama, District East Godavari.- Watertightening of the leaky roofs of Subramanyaswamy, Virupaksha, Vatuka Bhairava temples and *nandi mandapa* were done. Removal of an accumulated thick coat of lime wash on the carved stone pillars, capitals, lintels, inscriptional slabs, door-jambs and ceilings with floral designs on the eastern and southern main gates of Sri Bhimeswaraswamy temple was carried out.

201. Kumara Bhimeshwara Temple, Samalkota, District East Godavari.— Work of re laying the roof of the main shrine was completed.

202. Bhavanarayanaswamy Temple, Bapatla, District Guntur.— Accumulated thick coat of lime on the inscribed stone walls of inner *prakaras* has been removed.

203. Fort, Golconda, District Hyderabad.— Replacement of wooden beams in the walls of the winding staircase of Asilia Khana of the fort was completed.

204. Group of Temples, Alampur, District Mahabubnagar.— Dismantling and transportat-ion of basement stones of Papanasi temple to the stackyard was attended to. The *Siva-linga* of the main temple of the Papanasi group was also shifted to the stackyard.

KARNATAKA

205. Bahamani Tombs, Astur, District Bidar.— The area around the Bahamani tombs were fenced with barbed wire to ensure security.

South-western Circle

GOA, DAMAN AND DIU

206. Mahadeva Temple, Curdi, Goa.— The work of numbering and photographic documentation of the veneer stones of the temple was completed.

207. Bom Jesus Basilica, Old Goa.— The bulged and loose plaster patches on the interior walls of the church were scraped off and replastered with combination of lime cement mortar and distempered with pale cream oil bound over one coat of primer. The oil bound distemper given to the interior walls in the recent past had peeled off in patches and hence the entire interior walls were distempered with a single coat of pale cream oil bound to maintain uniformity of shade. The loose and bulged out plasters on the walls of the rooms opening in the ground floor corridor of the ancillary building were scraped off and replastered with combination mortar and white washed with shell lime. The affected parts of the two buttresses were dismantled stone by stone and the same were restored in conformity with the original after eradiction of the roots. The damaged patches of plaster of the rear wall of the ancillary building were completely removed and replastered with combination mortar and a colour wash of buff shade given to the entire wall.

208. Lady Rosary Church, Old Goa.— The decayed plaster on the inner faces of the walls were removed and replastered with combination mortar and whitewashed with shell lime. The moss and lichen was brushed off from the outer faces of the walls and a snowcem wash has been given as a preservative cement coat of ivory shade in conformity with the original.

209. St. Assisi Church, Old Goa.— The peeled off plaster on the walls of its vestibule has been scraped off and replastered with combination mortar and white washed with shell lime. The ceiling of the vestibule was also distempered with white oil bound. The snowcem wash given in the recent past to the outer faces of the walls had discoloured due to the growth of moss and lichen; hence one coat of snowcem wash of mid-cream was given in conformity with the original. Besides, the broken and missing glasspanes of the windows were replaced with new ones.

210. Se Cathedral Church, Old Goa.— The loose and bulged out plaster patches of the inner and outer faces of the walls and ceiling of main hall and side altars were removed and re-

plastered with a combination mortar. The broken and missing Mangalore tiles and the glass-panes of the windows were also replaced with new ones.

211. St. Cajetan Church, Old Goa.— The snowcem wash given in the recent past had discoloured at places and hence one coat of snowcem as a preservative coat of mid-cream shade was given in conformity with the original after removing vegetation and scrubbing of moss and lichen.

212. St. Paul Gate, Old Goa.— The moss and lichen were removed from the walls and a preservative coat of cement paint of ivory shade applied. The thick vegetation around the monuments were removed and the area levelled and reconditioned.

MAHARASHTRA

213. Bibi-ka-Maqbara, Aurangabad, District Aurangabad.— The decayed and peeled off plaster patches on the ceiling of the second bay and the outer face of the rear wall of trje mosque adjoining the western enclosure wall were raked-off and replastered with combination mortar in conformity with the original.

214. Rock-cut Caves, Ajanta, District Aurangabad.— A projecting ledge in R.C. C. simulating rock surface in colour and texture is being provided to prevent damage due to splashing of rain water in to the verandah of the Cave 14. The footbridge between Caves 20 and 21 and the concrete path approaching the garden of the Forest Department at a lower level was reconstructed and the breached pathway repaired besides providing strong barricades of I-section girders to prevent the rolling down of boulders in the near future.

215. Rock-cut Caves, Ellora, District Aurangabad.— The work of providing rock-cut drain on the top of Cave 19 to divert rain water splashing on the facade is in progress. The ashlar masonry pillars provided in the subshrine of Cave 32 by the erstwhile Hyderabad State were replaced with R.C.C. pillars in conformity with the original.

216. Kopeshvar Mahadeva Temple, Khidrapur, District Kolhapur.— Copper dowels were inserted in the loose stones of hemispherical roof to stabilize them and loose joints were filled with concrete and the terrace rendered watertight in conformity with the original.

Western Circle GOA, DAMAN AND DIU 217. Church of Holy Jesus, Moti Daman,

District Daman.- In continuation of the work

of last year *{1983-84,* p.228), the decayed wooden rafters, beams, and battens of Mangalore tiled roof were replaced by new wood work. The deteriorated decorative wooden ceilings were replaced with new ones.

218. Fort, Moti Daman, District Daman.— The work of underpinning the fallen portion at the water level of the moat wall is in progress.

219. Fort, Diu, District Diu.— The damaged parapet wall and the flooring were reset as per the original in lime cement mortar. The work is in progress.

GUJARAT

220. Baba Lauli's Mosque, Ahmedabad, District Ahmedabad.— In continuation of last year's work *(1983-84,* p. 229) the stone flooring over a bed of concrete in front of the mosque was completed. The removal of the debris up to the original floor level is in progress.

221.Siddi Bashir's Minars, Ahmedabad, District Ahmedabad.— In continuation of last year's work *(1983-84,* p. 229) the weathered or broken stones of the ashlar masonry was chiselled or replaced by new stones as per the original.

222. Ancient Site, Lothal, District Ahmedabad.— To ward off stray cattle from doing damage to the exposed structures, the work of fencing the area is in progress.

223. Dwarkadhish Temple, Dwarka, District Jamnagar.— In continuation of the last year's work *(1983-84,* p, 230), the stone members of the northern porch were dismantled and reconstructed up to the ground floor as per the original with newly carved stone. The work of the first floor is in progress. The damaged roof of the first floor of the southern gateway was re-laid by providing new woodwork and stone-pavement in lime cement matching to the original.

224. Sun Temple, Modhera, District Mahesana.— The renovation of the missing roof of the *garbha-griha* of the main temple was taken up by providing a new ashlar stone corbelled 'roof. The work of fencing the area is in progress.

225. Rani-ki-Vav, Patan, District Mahesana.— In continuation of last year's work *(1983-84,* p. 230), the desilting of the earth and the removal of sculptures and architectural members from within the step-well is in progress. The side walls of the well which were out-of-plumb were dismantled and reset in proper position in lime cement mortar. The missing portions of the wall were reconstructed by using plain dressed ashlar stone masonry. The work is in progress.

226.Old Armenian Tombs, Surat, District Surat.— To prevent erosion of soil and damage to the tombs on the southern side, the work of erection of retaining wall in brick masonry has been taken up and the work is in progress.

227. Baroda Gate, Dabhoi, District Vadodara.— A dwarf wall in brick masonry was constructed with M.S. grills to prevent encroachments in the area. The Railway track side area was also fenced.

228. Hira Gate, Dabhoi, District Vadodara.—To prevent misuse of the area by the nearby residents the front portion of the gate was provided with a dwarf compound wall with MS. Grill work. The further work is in progress.

RAJASTHAN

229. Adhaidin-ka-Jhopra, Ajmer, District Ajmer.— The fallen enclosure wall with rubble stone masonry was reconstructed. The openings of the side wall were fixed with iron grill to stop unauthorized entry in to the monument.

230. Fort Wall, Chittaurgarh, District Chittaurgarh.— In continuation of last year's work *(1983-84, p. 230)* the portion of a fortification wall near Suraj Pole was rebuilt in random rubble masonry in lime mortar as per the original. The work is in progress.

231.Rana Kumbha Palace, Chittaurgarh, District Chittaurgarh.— The top of the fallen walls of the palace complex were watertightened.

232. Pundarik-ji-ki-Haveli, Jaipur, District Jaipur.— The broken and missing portions of the *chhajja* stones were replaced and the open area in the front was provided with stone floor ing and concrete bed.

233. Fort, Jaisalmer, District Jaisalmer.— The bulged and decayed portion of the lower fortification wall near the old bus stand was dismantled after numbering the stones and resetting, the weathered stones duly dressed in lime cement mortar (Pls.80-81). The top rubble masonry wall was provided with new stones of a bigger size. Proper batten and alignment of the wall was also maintained. The approach road inside the fort between Ganesh Pole to Suraj Pole was also repaired by removing the womout and uneven stones and resetting them in lime cement mortar after dressing. Proper slope and gradient was also maintained.

234. Jaina Temple Complex, Krishnavilas, District Kota.— In continuation of the work of last year *(1983-84,* p. 231), the work of reconstruction of the temple using the origin-nal stone members up to *chhajja* level was taken up and completed.

235. Badi Kacheri (Hamir's Court), Fort, Ranthambhore, District Sawai Madhopur.- In

continuation of last year's work {*1983-84,* p. 231) the fallen portions of the arched roof was rebuilt with new stones in lime cement mortar as per the original and the top watertightened by laying random rubble masonry in lime cement mortar.

236. Fort, Ranthambhore, District Sawai Madhopur.— In continuation of last year's work {*1983-84,* p. 231) the wooden shutters of the other gates were repaired by replacing the dama ged wooden members. The wood preservative was also applied.

237. Hamir's Palace, Fort, Ranthambhore, District Sawai Madhopur.— In continuation of the work of last year {*1983-84,* p.231) the broken and damaged stone lintels were chiselled and provided with concealed girders. The uneven open area of the courtyard was levelled.

238. Ancient Mound, Pilibangan, District Sriganganagar.— To prevent the damage to the ancient ruins by the stray cattle, a barbed wire fencing with angle iron poles has been provided.

239. Ancient Mounds, Rangmahal, District Sriganganagar.— To prevent damage to the ancient mounds the barbed wire fencing with M.S. angle iron posts have been provided.

MOUNUMENTS MAINTAINED BY THE STATES

ASSAM

1. Siva Temple,(Siva Tilla) Sovai, District Cachar.— The damages caused by the earth quakes were repaired and restored by grouting and sealing the cracks.

2. Tamrewar Ruins, Khairawari, District Darang.— The site was enclosed with barbed wire fencing. The stone sculptures and architectural members lying scattered were arranged.

3. Siva Temple, Rudrasagar, District Sibsagar.— The vegetation growth was removed and the damaged portions repaired.

4. Rock Inscription, Bhomoraguri, Tezpur, District Sonitpur.— A replica of the inscrip tion has been prepared and installed in the Cole-park, Tezpur.

GUJARAT

The conservation work was carried out in the following monuments:

5. Lakhota (Kotho), Jamnagar, District Jamnagar.
6. Adikadi Vav, Junagadh, District Junagadh.

7. Jumma Masjid, Junagadh, District Junagadh.
8. Kothar, Junagadh, District Junagadh.
9. Navat Mohabat Khan's Maqbara, Junagadh, District Junagadh.
10. Navghan Kuva, Junagadh, District Junagadh.
11. Nilamtop, Junagadh, District Junagadh.
12. Sartanji Choro, Porbandar, District Junagadh.
13. Hava Mahal, Modhera, District Mahesana.
14. Group of Temples, Lavana, District Panch Mahals.
15. Lakh en a Jaina Temple, Abhapur, District Sabarkantha.
16. Kunda, Garhbhirpura, District Sabarkantha.
17. Step-well, Hampur, District Surendranagar.

KARNATAKA

18. Ancient Remains, Hampi, District Bellary.— The replacement of broken beams and slabs of the *mandapa* was completed. Dislocated and sunken of the steps on the eastern end of the Virupaksha Bazar were also removed and reset as per the original. The excavated Structures 3,4, 4A and toilet have been conserved by edging the lime plastered floor and pointing and resetting the basement courses.

19. Sriranganathaswamy Temple, Neerthadi, District Chitradurga.— The architectural members were removed and reset. Conservation of the compound wall is in progress.

20. Kallesvara Temple, Aralaguppe, District Tumkur.— Wall and basements of the temple have been exposed. The work of replacement of damaged and old bricks is in progress.

MADHYA PRADESH

21. Rani Mahal, Islamnagar, District Bhopal.— The dilapidated portions of the plinth of the platform were repaired by providing flag stones and a base concrete bedding.

22. Sheesh Mahal, Islamnagar, District Bhopal.-The decayed concrete from the roof was removed and plaster reset and watertightened.

23. Haziwali-ki-Dargah, Kotra Vihar, District Rajgarh.— The barbed wire fencing with a turn shuttle gate was provided.

24. Fort, Orchha, District Tikamgarh.— The collapsed main gate of the entrance of the fort was repaired.

25. Veer Singh Deo Maqbara, Orchha, District Tikamgarh.- The eroded inner floors of

the rooms were provided with dry stone packing after removing the lime concrete and boulder packing.

26. Vanavasi Mandir, Orchha, District Tikamgarh.— The vegetational growths were removed.

27. Monuments, Lohangi Hills, District Vidisha.— Retaining walls were constructed and G.T. pipes fixed on both sides of the staircase to avoid accidents. The pathway was constructed by providing *morum* bedding with cement pointing.

28. Mangla Devi Temple, Kakpur, District Vidisha.— The joints and gaps were water-tightened after resetting the disturbed stones.

MANIPUR

29. Thangal General, Wangkhei, Manipur.— To prevent entry of visitors and stray catties, a temporary door was provided and the external vegetational growths on the roof and walls removed.

NAGALAND

The following monuments were protected and preserved :

30. Second World War Tank, Kohima, District Kohima.
31. Stone Monuments, Phulbari, District Kohima.
32. Sop Funuo Memorial, Rukhroma, District Kohima.
33. Jaina and Ediben Memorial, Mongchen, District Mokochung.
34. Wooden Sculptures, Shangyu, District Mon.
35. Historical Sites, Chungliyimti, District Tuensang.

RAJASTHAN

Conservation, preservation and clearance works were carried out at the following monuments :

36. Fort, Ajmer, District Ajmer.
37. Rajmahal Palaces, Amber, District Jaipur.
38. Cenotaph at Gaitor, District Jaipur.
39. Observatory, Jaipur, District Jaipur.
40. Siva Temple, Thanwala, District Nagaur.
41. Temple of Makarmandi Mata, Nimaj, District Pali.
42. Excavated Remains, Ahar, District Udaipur.
43. Mira Temple, Ahar, District Udaipur.

44. Gangodbhed Kund, Ahar, District Udaipur.

45. Ruined Palace of Maharana Pratap at Chavvand, District Udaipur.

UTTAR PRADESH

The repairing work has been carried out at the following monuments and sites:

46. Rajmandir, Ayodhya, District Faizabad.
47. Bithoor, Kanpur, District Kanpur.
48. Lai Baradari Bhawan, Lucknow, District Lucknow.
49. Kusumvan Sarovar, Mathura, District Mathura.
50. Potra Kund, Mathura, District Mathura.
51. Kardmeshwar Mahadeva Temple, Varanasi, District Varanasi.
52. Bakaria Kund, Battis Khamba, Varanasi District Varanasi.

WEST BENGAL

53. Gokulchand Temple, Gokulnagar, District Bankura.— The vertical and horizontal cracks were repaired and pointed and the floor of the *garbha-griha* re-laid and consolidated with mortar. Stairs to the entrance were reconstructed with dressed laterite blocks with mortar. Old and decayed blocks were replaced and reset with new dressed laterite blocks. The further work is in progress.

54. Surya Temple, Sonatapal, District Bankura.— The womout bricks of the walls were replaced with new ones as per the original and ornamental works on the surface restored. The joints of the walls were pointed. The work is in progress.

55. Jatilesvara Siva Temple, Purbadaha, District Jalpaiguri.— The corrugated tin *chhajjas* were replaced with casted sloped sheets matching the original and the floor of *the garbha-griha* was reconstructed. The minor patches were also attended to.

TREATMENT OF MONUMENTS AND PAINTINGS[1]

ANDHRA PRADESH

1. Virabhadrasvami Temple, Lepakshi, District Anantpur.— Paintings on 105 sq. m area of the ceiling of the *mukhamandapa* of the main temple, walls of Ramalingeswara and Virabhadra shrines and ceiling in front of Vishnu shrine were taken up for the removal of old translucent preservative coating, oil and sooty matters. Cleaning together with consolidation of pigments was carried out by using toluene, cellosolve, triethanolamine, butyl lactate and morpholine along with turpentine as restrainer. A total area of 55 sq. m has been cleaned and preserved with 1 % solution of polyvinyl acetate in toluene.

2. Ramappa Temple, Palampet, District Warangal.— The work of removal of vegetational growth, lime wash and greyish ingrained accretions was carried out by using 3% aqueous ammonium hydroxide solution with teepol. The treated area was given fungicidal treatment with 2% of aqueous solution of sodium pentachlorophenate and finally preserved with 3% polyvinyl acetate in toluene.

ASSAM

3. Vishnu Janardhan Temple, Guwahati, District Guwahati.— The thick growth of moss, lichen, dust, dirt, etc. were cleaned by using 2-3% aqueous solution of ammonia. A fungicidal coating of 1% zinc silico-fluoride solution was provided followed by a preservative coating of 3% polyvinyl acetate in toluene.

4. Siva Temple, Neghertting, District Jorhat.— Cleaning the plaster surface of the temple, covered with thick layers of vegetational growth, was initiated from the rear side using dilute ammonia. The cleaned area was given double coating of fungicide with 1-2% zinc silico-fluoride followed by a coat of 3% polyvinyl acetate to prevent re-growth of moss and lichen.

BIHAR

5. Sarai Mound Shrine, Nalanda, District Nalanda.— The colossal image of the seated

[1]information from : 54, Department of Archaeology, West Bengal and the rest from Director (Science) of the Chemistry Branch of the Survey.

Buddha in the shrine of Sarai Mound having no stucco covering on the major surface area was gradually reducing to a powdery state. To arrest the fall of dust, the image was sprayed with 1% solution of polyvinyl acetate in toluene as well as to ensure the better penetration of the consolidant, the application was repeated 3-4 times taking care that the subsequent application was carried out before the previous one could dry. The colossal image of the seated Buddha has been considerably consolidated and the fall of dust has been significantly checked. To secure the remaining portion of the stucco, the edges were fixed by filleting.

6. Asokan Inscriptions at Chandan Sahib Hill, Sasaram, District Rohtas.— Lime wash over the Asokan inscriptions was chemically cleaned with 2-3% aqueous solution. Vegetational growth was also eradicated with the help of 2-3% aqueous ammonia solution and finally preserved.

7. Sher Shah Sun's Tomb, Sasaram, District Rohtas.— The uncleared area of the gate way was taken up for eradication of vegetational growths by using dilute aqueous ammonia solution. The black spots were bleached with oxalic acid and hypo-solution. A fungicidal treatment was also given to the cleaned surface with zinc silico-fluoride followed by a preserva tive coat of 2% polyvinyl acetate.

DELHI

8. Gateway to Meena' Bazar, Lahori Gate, Red Fort, Delhi.— Calcareous and muddy accretions were brushed off with 3% acetic acid solution and simple water. Bees wax, wherever present was melted by heating with a blow lamp and swabbing with cotton. The treated surface was given applications of 1% solution of sodium pentachlorophenate and finally preserved with 3% solution of methyl methacrylate in toluene.

9. Zafar Mahal, Red Fort, Delhi.- The removal of algal growth from exterior walls of Zafar Mahal was taken up with 2% liquid ammonia and teepol using soft nylon brushes. The surface was then subjected to paper pulp treatment for eradication of soluble salts from the exposed surfaces. The loose and fragile surfaces were consolidated with fevicol. Finally the area was given fungicidal treatment with 1% solution of sodium pentachlorophenate followed by a preservative coat of 3% solution of methyl methacrylate in toluene.

10. Jamali-Kamali Tomb, Mehrauli, New Delhi.- Vegetational growths from the dome were chemically removed by using a mixture of ammonia and teepol in water. The work is in progress.

11. Muhammad Shah Tomb, Lodi Tomb Complex, New Delhi.— Chemical treatment and preservation of the remaining part of the exterior surface of the dome, burjis, cornices, etc. were completed. Vegetational growths were eradicated by using aqueous ammonia and

teepol followed by the application of fungicidal agent(sodium pentachlorophenate)and finally preserved with 3% solution of perspex in toluene.

12. Safdarjung Tomb, New Delhi.— Moss, lichen and dust-dirt deposits over the stone and plaster of the pillars of the gateway on the main entrance was eradicated with the help of a mixture of ammonia and teepol. Cleaned area was given one coat of 1% solution of sodium pentachlorophenate as fungicide followed by 3% solution of perspex in toluene as preservative.

GUJARAT

13. Asokan Rock Inscriptions, Junagadh, District Junagadh.— Dust, dirt and other greasy accretions were chemically cleaned from the surface by using the mixture of liquid ammonia together with teepol. The cleaned areas were finally preserved with 3% polyvinyl acetate solution in toluene.

14. Mahatma Gandhi's House, Porbandar, District Junagadh.— The hidden paintings in the second floor were subjected to chemical treatment. Adherent deposits of calcareous nature was eliminated mechanically as well by using aqueous alcoholic solution and concealed paintings were exposed and finally preserved with transparent preservative.

15. Galteswar Temple, Sarnal, District Kheda.— The chemical treatment and preserva tion work of sculptures and carvings on the outer wall of the main temple was carried out for removal of old and hard incrustations of lime plaster, moss and lichen, etc. The hard calcareous accretions were carefully eliminated. Obscure details of beautiful small sculptures and carvings were brought to light. Consolidation and preservation work of the deteriorating sculpture has also been completed on its north-eastern portion. The work is in progress.

16. Tambekerwada, Vadodara, District Vadodara.— The work of chemical cleaning for the removal of dust, dirt and greasy matters from the wall paintings in the small room of the first floor of Tambekerwada was carried out by using organic solvents. The old yellowish coating of a preservative was removed with toluene and the loose flaking pigments, wherever found, Were consolidated.

HARYANA

17. Ibrahim Lodi's Tomb, Narnaul, District Mahendragarh.— The superficial deposits of dust, dirt, greasy matter, birds excreta and thick smoke layers were removed from the interior walls with detergents as well as by mechanical means and at places ammonical solution was applied to remove the thin deposits of moss and lichen. About 60% of the area was treated but 10% of the treated area has been preserved with poly methyl methacrylate in toluene. The work is in progress.

HIMACHAL PRADESH

18. Narbadeshwar Temple, Tira-Sujanpur, District Hamirpur.— The paintings on the eastern outer wall were subjected to chemical treatment with organic solvents and preserved with 3% polyvinyl acetate in toluene.

19. Buddhist Monasteries, Tab©, District Lahaul and Spiti.— The paintings on the comers of both walls of Chilkong Gumpha were treated with organic solvents and preserved with 3% polyvinyl acetate solution in toluene. The paintingson the western wall of Domlong Gumpha were treated with organic solvents after removing excessive dust and dirt. The treated area was preserved with 3% polyvinyl acetate in toluene. Filletting and filling of gaps and cracks were also done (Pis. 82-85).

JAMMU AND KASHMIR

20. Avantisvami temple, Avantipur, District Anantnag.— The deposits of moss and lichen were removed by ammonical solution in water and preserved with polyvinyl acetate solution in toluene after applying fungicides. The stone sculptures engraved on the wall of the entrance were chemically treated and preserved.

21. Pathar Masjid, Srinagar, District Srinagar.— The exterior walls of the entrance gate covered with dust and dirt, hard incrustations of moss and lichens were chemically treated with detergents and ammonical water mechanically. Fungicidal treatment was also applied follow ed by a preservative coat of polyvinyl acetate in toluene.

KARNATAKA

22. Tipu Sultan's Palace, Bangalore, District Bangalore.— Experimental work for the removal of hard ingrained accretions from the paintings was carried out involving the use of cellulose pulp compress and Japanese tissue with sodium bicarbonate and sodium salt of ethyl-ene diamine tetra-acetic acid (EDTA) in aq. medium. The work is in progress.

23. Viranarayana Temple, Chennakesava Temple Complex, Belur, District Hassan.— Thi-ck growth of lichen and moss obscuring the details of the sculptures on the exterior of the temple were successfully removed using 5% aqueous solution of a mixture of liquor ammonia and teepol. lime patches were removed by using 5% aqueous glacial acetic acid. The treated areas were given a fungicidal application with 1% aqueous solution of sodium pentachloro-phenate and preserved with 2% solution of polyvinyl acetate in toluene.

24. Dariya Daulat Bagh, Srirangapatna, District Mandya.— Paintings on the south wall of western verandah need consolidation of curling pigments, removal of a big contrast patch

left during the earlier conservation work and removal of translucent preservative coating. The paintings were treated with cellosolve, butyl lactate, methanol, diacetone alcohol, and turpentine. The treated areas were then preserved with 1% solution of polyvinyl acetate in toluene.

25. Rameswara Temple, Kuppegadde, District Shimoga.— The entire exterior of the temple and the interior of the *navaranga,* having fine carvings and sculptures found covered with moss and lichens, lime wash and red ochre patches were removed by using aqueous solutions of teepol, ammonium hydroxide, glacial acetate acid and deoxidine-125 in proper dilutions. Certain wide cracks in the flowered canopies in the *navaranga* were filled up by using coarse-grained sand of the same stone mixed with epoxy resins. The treated areas were then given a coat of fungicide viz. 1% aqueous solution of pentachlorophenate followed by a 2% solution of polymethyl methacrylate in toluene.

26. Chaturmukha Temple, Karkala, District South Kanara.—Thick vegetational growths and patches of red ochre from the pillars and roof of *mandapa* were removed by using an aqueous solution of teepol and liquor ammonia and 2% aqueous solution of deoxidine-125. The treated areas were given a treatment of 1% aqueous solution of sodium pentachlorophenate and finally preserved with 2% polymethyl methacrylate in toluene.

MAHARASHTRA

27. Ajanta Caves, Ajanta, District Aurangabad. — The work of stengthening loose paint ing and filling of cracks on the eastern and southern aisle in Cave 2 was completed. The filling of the cracks was done with a mixture of plaster of Paris, fevicol and earth colour.

Fixing of pigment layer to the plaster ground of Cave 9 was done by injecting polyvinyl acetate solution in toluene. Accretions were removed from the Pillar 6 of Cave 17, and panels 8, 9 and ll, were exposed and preserved with polyvinyl acetate solution in toluene. Eradication of silver fishes was done in the cells of Caves I,2,16andl7,by spraying pyrethrum in alcohol.

28. Bibi-ka-Maqbara, Aurangabad, District Aurangabad.— Red stone structures, badly covered with dust, dirt, moss and lichens were subjected to chemical treatment with the help of 1% ammonia and teepol solution. After washing thoroughly with water, 3% solution of sodium pentachlorophenate was applied as. fungicide followed by 1% solution of polyvinyl acetate in toluene as preservative. Marbles on the front portion of the main mausoleum cover ed with thick oily deposits by constant touchings of the visitors were cleaned with the help of ammonia and teepol, and the oil stains were removed by using chloramine-TDTA, etc. The metallic(Brass) doors of the Maqbara were also treated with 2% alkaline Rochelle salt solution, citric acid and teepol. The doors were then thoroughly washed with water and preserved with polyvinyl acetate in toluene.

29. Caves, Aurangabad, District Aurangabad.- Thick deposits of dust, dirt and other accretions over the sculptures in Cave 6 Were chemically removed by using 1% ammonia solution with non-ionic detergents. The lime coatings were removed by using dilute acetic acid. The fungicidal treatment was then given with 3% zinc-silicofluoride followed by a preservative coating of 1% solution of poly vinyl acetate in toluene.

30. Ellora Caves, Ellora, District Aurangabad.— The exposure of hidden paintings in Cave 16 was further extended and brought to light a number of beautiful floral designs, figures and inscriptions. The consolidation of loose plaster in Cave 12 were also carried out.

31. Caves, Elephanta, District Raigadh.— The vegetational growths, dust, dirts and bird's droppings on the facade and sculptures of Cave 1 were chemically removed by using 1% solution of ammonia with teepol. Paper pulp treatment was carried out for extraction of salts from the panels. The cracks, wherever they existed were consolidated by using silica powder mixed with epoxy resin and matching colours. All the surfaces were then subjected to fungicidal treatment with 3% polyvinyl acetate in toluene.

32. Siva Temple, Ambemath, District Thane.—The colour and texture of stone sculptures and carvings of the temple had undergone considerable physical change due to a very thick deposition of dust, dirt and vegetational growth. The consolidation of brittle and loose port ions was carried out with epoxy resin. The sculptures and carvings were cleaned with 1% ammonia solution with idipol.

ORISSA

33. Nilamadhaba and Sidheswara Temples, Gandharadi, District Phulbani.— The Sidheswara and Nilamadhaba temples were chemically cleaned for the eradication of dried black patches of moss and lichen. The use of oxalic acid solution to bleach the superficial black patches was also made. The cleaned areas have been given fungicidal treatment as well as a preservative coating.

34. Lingaraja Temple, Bhubaneswar, District Puri.- The subsidiary shrines (48, 63 and 64) were overlaid with hard accretionary deposits of moss, lichen and algal growths. After giving fungicidal treatment a preservative coating of 1% methyl methacrylate was applied.

35. Mitreshewar Temple, Bhubaneswar, District Puri.- Thick and hard accretions of dust, dirt, vegetational matters, etc. were chemically removed by 2% dilute ammonia mixed with lissapol-D. A fungicidal coating of 1% zinc silicofluoride was provided followed by an application of preservative coating of 1% methyl methacrylate. The entire temple has been chemically preserved.

36. Raja Rani Temple, Bhubaneswar, District Puri.— The *sikhara* portion and vertical wall on its southern side covered with vegetational growths have been subjected to chemical treatment using 2 — 3% dilute ammonia solution.

37. Jagannatha Temple, Puri, District Puri.— In continuation of last year's work *(1983-84,* p. 245), the chemical treatment for the removal of lime accretions with dilute acetic acid was taken up on the south and south-west sides. The black patches were considerably bleached with oxalic add. The cleaned surface was given fungicidal treatment and a preservative coating.

RAJASTHAN

38. Someshwara Temple, Bhangarh, District Alwar.— Ammonia and teepol mixture was used for the removal of dust, dirt and vegetational growth. Cleaned area was given a fungi cidal treatment of 1% sodium pentachlorophenate. The work is in progress.

39. Nilkantha Mahadeva Temple, Nilkantha, District Alwar.— A thick coating of lime wash present on the ceiling of the portico was reduced mechanically followed by chemical cleaning with 3% to 5% acetic acid. The work is in progress.

40. Chitrashala, Chhatra Mahal, Bundi, District Bundi.— In continuation of last year's work*(1983-84,* p.245),paintings on the walls in the comer rooms of the above palace were treated chemically. The dust, dirt, smoke, water marks and old preservatives from the murals were removed by various organic solvents like benzene, acetone, methanol, cellosolve, etc. The cleaned surface was preserved with 2% polyvinyl acetate in toluene. The- work is in progress.

41. Chandraprabhu Temple, Jaisalmer Fort, Jaisalmer, District Jaisalmer.— The beautiful sculptures and carvings on yellow stone inside the temple were almost hidden owing to the several applications of Fullar's earth (Multani Mutti) were subjected to chemical treatment. An area of 10 sq. m was chemically cleaned and preserved and the hidden sculptures exposed.

42. Fort, Jaisalmer, District Jaisalmer.— The modem paints on the walls of the Fort were chemically cleaned with the help of organic solvents such as methylene chloride, acetone, toluene, carbon tetrachloride, etc. The work is in progress.

TAMIL NADU

43. Kailasanatha Temple, Kanchipuram, District Chingleput.— The exterior walls of temple covered with a thick growth of moss and lichen were removed by using an aqueous solution of ammonia hydroxide and teepol in 3:1 followed by washing with water. The entire area was then given a 2% fungicidal (aqueous solution of sodium pentachlorophenate) treat-

ment and finally preserved with 2.5% methyl methacrylate in toluene.

44. Brihadisvara Temple, Thanjavur, District Thanjavur.— Paintings in Chamber nos. 9 and 12 of the temple, covered with thick deposits of soot, dust, dirt and other accretions were removed by using toluene, triethanol-amine, cellosolve, methyl ethylketone and butyl alcohol, etc. Turpentine has been used as a restrainer. The treated paintings were then pre served with 1% polyvinyl acetate in toluene. Apart from chemical cleaning a lot of consolida tion work for fixing the loose pigments, etc. has also been carried out. The work is in progress.

45. Brihadisvara Temple, Gangaikondacholapuram, District Tiruchchirapalli.— The granite sculptures in the first *tala* of the main *vimana* of the temple were badly covered with brownish accretions and vegetational growth. Eradication of these vegetational growth has been done by using 3.1% of aqueous solution of ammonium hydroxide and teepol. Other brownish accretions were removed with 5% rustodine in water. Entire area was then given a treatment with 1.5% aqueous solution of sodium pentachlorophenate as a fungicide followed by 2% of polymethyl methacrylate in toluene as preservative.

UTTAR PRADESH

46. Taj Mahal, Agra, District Agra.— In continuation of last year's work *(1983-84,* p.246) chemical treatment of the remaining part of the wall was taken up for the removal of black patches of algal growth, dirty and greasy stains and other surface accretions of oil and soot. The dried algal growth were removed after softening with dilute ammonical solution and scrubbing with soft nylon brushes. Dust and dirt were removed by using non-ionic surface detergent, hydrogen peroxide and triethanolamine. The stone surface was then thoroughly rinsed with distilled water. The marble surface on the exterior southern lower small arch covered with dirt, dust, grease, sooty and oily accretions was cleaned by absorbent clay pack method. A water base pack of magnesium trisilicate added with little ammonia, teepol and hydrogen peroxide was applied on the surface overnight The packs were then removed by using cotton swabs with distilled water.

Dust and dirt, stains, greasy matter and other surface accretions of oil and soot which covered the marble work in arches inside the cenotaph were also cleaned by using a pack of magnesium trisilicate containing little ammonia, teepol and hydrogen peroxide. Accretions of oil and soot were removed with organic solvents like ethylene dichloride, benzene and tri-ethanolamine. The work is in progress.

47. Diwan-i-Khas, Fatehpur Sikri, District Agra.-Eradication of unwanted substances from an intricately carved central pillar and other stone carvings in the interior of Diwan-i-Khas was continued. Dust, dirt, bat's excreta and accretions of oil and soot, etc. were removed by using non-ionic detergent and organic solvents. The treated surface was given a coat of 2% solution of polyvinyl acetate in toluene.

48. Shaikh Salim Chisti Dargah, Fatchpur Sikri, District Agra.— The shell work on the sandal wood canopy was chemically treated. The dust, dirt, soot and greasy matters were removed by using acetone, benzene, triethanolamine, etc. with the help of cotton swabs. The loose and detached pieces of mother of pearl were also fixed by synthetic adhesives. the clean ed surface, thereafter was preserved by 2% solution of polyvinyl acetate in toluene.

49. Allahabad Fort, Allahabad, District Allahabad.— Black patches of dried moss and lichen, dirt and dust were cleaned from the pillar with the help of ammonical water and teepol. Paper pulp treatment was also done to extract soluble salts wherever salt efflorescences were noticed. The pillar was given a fungicidal application followed by polyvinyl acetate in toluene.

50. Khusru Tomb, Allahabad, District Allahabad.— The old preservative from the murals was removed using toluene with cotton swabs and soft brushes. The superficial accretions of dust, dirt, grease and soots on the paintings were cleared by using a mixture of cellosolve acetone, etc. in rectified spirit. Bat's excreta was eradicated by applying semi-solid paste of 1:4 sodium bicarbonate and carboxy methyl cellulose. Insect nests and cobwebs were also removed. The treated area was then preserved with a 2% polyvinyl acetate in toluene. The work is in progress.

51. Ancient Pillar, Kahon, District Deoria.— The thick patches of dried moss and lichen over the ancient sandstone pillar were chemically removed with 5% solution of ammonia. After the removal of vegetational growth, the pillar was given a fungicidal treatment followed by a coat of 2-3% solution of polyvinyl acetate in toluene as preservative.

WEST BENGAL

52. Jor Bangla Temple, Bishnupur, District Bankura.— In continuation of the previous year's work *(1983-84,* p. 247), the cleaning of terracotta relief was done with the help of non-ionic detergent. lime patches, wherever existed were also removed. The cleaned panels were finally given a coat of preservative (Pis. 86-87). The ponderous piers (pillars) at the entrance on the south were also treated for eradication of moss, lichen, etc. and were preserved after fungicidal treatment.

53. Radhey Shyam Temple, Bishnupur, District Bankura.— The lime wash from the stucco figures in the south verandah were removed with dilute acetic acid and then preserved. Modelling was also done wherever necessary.

The plain lime plaster having lime wash covering and other accretions from the eastern verandah were removed with dilute acetic acid and a mixture of organic solvents. Chemically cleaned area was then preserved with 3-4% polyvinyl acetate in toluene.

54. Gokulchand Temple, Gokulnagar, District Bankura.— The panels and square decorations of the temple affected by organic growths and salts were chemically treated followed by a preservative coat of polyvinyl acetate in toluene.

TREATMENT OF EXCAVATED OBJECTS AND MUSEUM EXHIBITS'

55. Twenty-six bone, iron and copper objects and copper coins(Pls. 88-89) from Sringa-verapura were chemically treated.

56. Eleven bone and copper objects from Hulas were chemically cleaned and preserved.

57. Four stone sculptures from Sanghol were preserved.

58. Four bone objects from Kalibangan were chemically preserved.

59. One painted surface from Chitrashala, Chhatra Mahal, Bundi was chemically treated.

60. One hundred and six copper objects from Ramapuram were preserved.

61. Thirty-seven copperplates and two hundred and seventy-one copper coins from Director (Epigraphy),Mysore were chemically treated and preserved.

62. Twenty-five objects such as copper balls, crawling Krishna, bracelet, bangle pieces and bowls from Iravateswara temple were chemically preserved.

63. Books and manuscripts from the Delhi Circle were also chemically treated.

64. Books, manuscripts and paintings from Taj Museum, Agra, were also chemically tre ated and preserved.

65. Bone tools, antlers, painted pottery, all of the pro to-historic period from Pandu Rajar Dhibi, Burdwan, were chemically treated and preserved.

66. The preliminary treatment of more than one hundred stone sculptures (Mathura sandstone) from Sanghol Excavation were carried out at the National Museum Laboratory, New Delhi. To remove the mud and calcareous deposits and to acclamatize to new environ ments (Effect of R.H.), the stone sculptures were cleaned by steeping with potable water by adding 1 /2% to 1% teepol and little liquid ammonia with soft brushes.

The other excavated materials which were treated by using known chemical solutions of optimum concentration included fifty coins, two beads, two spearheads and two arrowheads. The adhesive used for strengthening of these objects were reversible type. In the case of iron objects the iron oxide (mandoor) found in the excavated trenches was sprinkled at joints for

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'information from : 65, Department of Archaeology, West Bengal; 66-72, Department of Tourism, Cultural Affairs, Archaeology and Museums, Punjab; 73-75, Department of Archaeology and Museums, Rajasthan; and the rest from Director (Science) of Chemistry Branch of the Survey.

colour matching.

Argilicious pottery was cleaned with potable water and finally with distilled water followed by a protective coating of 3% polyvinyl acetate.

67. Treatment of a set of twenty rare gold coins in the possession of the department were taken up and their relative density w.r.t water was determined along with their thickness, diameter. etc. with the Vernier Callipers and Spherometer.

68. One shield was also treated with the help of rust softner solvents containing chemicals capable of forming a soluble complex with ferrous and ferric actions. The rust particles were removed either mechanically or by an ultrasonic cleaner depending upon the size of the object. The iron objects were cleaned with tanic acid while copper with 1,1,1, Benzotrazole, then the objects were dried in an oven at a temperature of 105°C and covered with a fine protective coating of micro crystalline wax.

69. The flaking paints of the six shields were fixed with an adhesive and the lost port ions were restored. The retouching of lacuna was done in accordance with the guidelines of ICCROM and developed by ISTITUTO Cantraledel Restauro during 1945-50.

70. A small area of painted walls of Kali Devi temple was treated to fix the paint layer with the masonry and also one panel was removed by the strappo technique.

71. Conservation of two oil paintings were carried out at the National Museum, New Delhi. After removing the canvas from a stretcher, water soluble adhesives were applied to the deteriorated flaking paint layers. The cleaning from the back was done by hot water. Finally the lining was done with new linen canvas using A W2 Resin and micro crystalline wax (M.P. 80°C) on a vacuum hot press. The facing was then removed, and painting was brought on a new stretcher. The old restorations were removed by using different solvents to bring out the original paint, and big holes wherever present were given linen canvas by using T.R. Heated Spatula. The filling was done with gelatin adhesive.

72. Five chandeliers and a trophy of arms and shields, presently displayed in Raj Bhavan, were chemically treated.

73. Two thousand and seven hundred coins from the Kasindra hoard, eighteen metal objects received from the Collector, Jaipur and two stone sculptures were cleaned and pre served.

74. Seventy small panels of wall paintings from Mansingh palace were cleared off white wash coatings. These were also restored and preserved.

75. About two-third portions of the facade of the Ganesapole, Amber palaces were cleaned and restored.

RESEARCH AND ANALYSIS[1]

76. The research section of the Chemical Branch of the Survey continued to collect data on the various parameters which may affect the monument on account of pollution. The various factors which are being studied are: i) level of So2 concentration, ii) sulphation rate studies at Taj and Sikandra, iii) dust fall measurements at Taj, Sikandra and Red Fort, iv) Meteorological studies such as wind direction, speed, temperature and humidity fluctuations, both ambient and inside the Dome of the Taj and Sikandra (These enable us to evaluate the pattern of pollutant concentration which emanate from the various sources) and v) Rain fall studies, its conductivity and pH values.

77. The Survey is also monitoring the air at Delhi by placing its sophisticated instruments at Red Fort. The laboratory is also studying the behaviour of different organic coatings like polyvinyl acetate, dynaglaze fomblin, wax polish, methyl methacrylate, dynasylan B.S.M. 40, polyconate, etc. which have been applied on the different marble slabs. It is seen that preservatives behave quite differently.

78. Further exposition of hidden paintings and inscriptions of the *nandi-mandapa* of Cave 16 at Ellora was continued and excellent figures have come out. The deciphering of in scriptions will throw much light on various events and the culture, customs, religion, and rare animals. The old accretions from Cave 12 were removed and interesting figures and designs especially on the ceiling and walls inside the Buddha Shrine were exposed.

79. Search for an indigenous Indian plant insect repellent was continued at Ajanta and an indigenous olfactometer was devised to test the repellency for silver fish. These experi ments & researches also involved the study of following in brief:

(i) Studied the marble pieces with the help of scanning Electron Microscope.

(ii) Studied the graphs of gum, resin, mastic, shellac glue and paintings by Infra Red spectroscopic analysis.

(iii) Identified the turpentine and walnut oil, varnish, glue, chlorophyll, anthocyamin pigments and sugar by thin layer Chromatography.

(iv) Studied the pattern of pottery samples by using differential thermal and thermo-gravimetric analysis.

(v) Different samples were analysed by X-ray diffraction method.

(vi) Different metal samples were analysed by Atomic Absorption Spectroscopy.

(vii) Physical parameters, viz. porosity, density etc. of marble specimens were determined.

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[1] Information from : Director (Science) of the Chemistry Branch of the Survey.

(viii) Blue dye was extracted from sixteenth and seventeenth century Cloth. (ix) PH of old newspapers were determined and de-acidified by using 1% Ba (OH) 2 & 3%Tio2.

FUTURE PLAN FOR RESEARCH WORK[1]

80. The Survey has also taken up a new project 'Effect of (NOX) gases on marble and sandstone*. The project involved whether there occurs any positive effect on monuments, made of marble and sandstone due to NOX gases which come from nearby factories. The work is in progress.

The project of compiling a technical history of Indian paintings is also continuing in respect of various supports, intonacco, binding media, pigments and dyes.

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[1] Information from : Director (Science) of the Chemistry Branch of the Survey.



82. Tabo: Domlong Gumpha ; wall paintings, before chemical treatment. *See page 266*



83. Tabo: Domlong Gumpha ; wall paintings, after chemical treatment. *See page 266*



84 Tabo: Buddhist Monasteries, before chemical treatment of paintings. *See page 266*



85. Tabo: Buddhist Monasteries, after chemical treatment of Paintings. *See page 266*



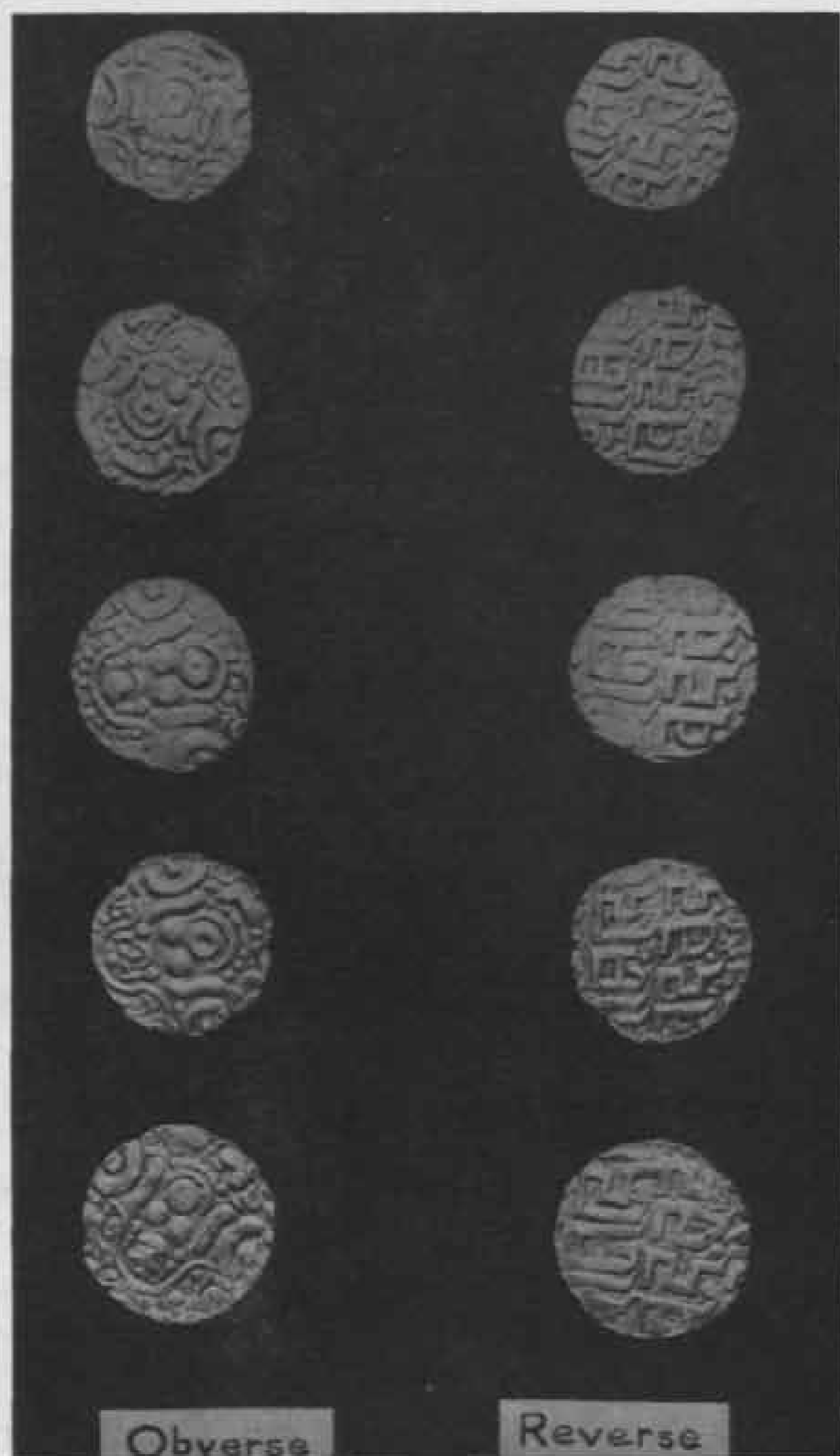
86. Bishnupur: Jor Bangla temple, before treatment of terracotta relief. *See page 271*



87. Bishnupur: Jor Bangla temple, after treatment of terracotta relief. See page 271



88. Sringaverapura: Before treatment of copper coins. *See page 272*



89. Sringaverapura: After treatment of copper coins. *See page* 272

ARCHAEOLOGICAL GARDENS[1]

DELHI

1. Hauz Khas, New Delhi.— The garden around the monument was maintained proper-

2. Humayun's Tomb, New Delhi.— The garden was kept in a presentable condition throughout the year.

3. Jantar Man tar, New Delhi.— A few varieties of flowers such as roses and c arm as were introduced in the garden.

4. Khairul-Manzil, New Delhi.— The garden was kept in a presentable condition.

5. Khan-i-Khana, New Delhi.— The garden around the monument was nicely maintain ed.

6. Lodi's Tomb, New Delhi.—The garden around the monument was nicely kept throughout the year.

7. Najaf Khan's Tomb, New Delhi.— The garden was nicely maintained by attending timely horticultural operations.

8. Purana Qila, New Delhi.- The garden was maintained properly.

9. Safdarjung's Tomb, New Delhi.- The garden was kept in a presentable condition throughout the year.

10. Qutb Garden, New Delhi.— The display of various kinds of flowers marked the beauty of the garden. The introduction of sprinkler system of irrigation was variously appreciated.

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[1] Information from the Chief Horticulturist of the Horticulture Branch of the Survey. Important works carried out during the year under review arc included here.

GUJARAT

11. Sun Temple, Modhera, District Mahesana.— The development of the garden around the monument was taken up by using the period flora.

12. Jami Masjid, Pavagarh, District Panch Mahals.— In order to provide ample water supply to the garden, a pumping set has been installed and a pipe line from the Delhi gate at Shahar-ki-Masjid to Jami Masjid was laid. The work is in progress.

13. Hazira Tomb, Vadodara, District Vadodara.— Water pipe lines have been laid. The garden work is in progress.

GOA, DAMAN AND DIU

14. Churches Garden, Velha Goa, District Goa.— The garden around the Churches were fully renovated and fountains and floodlights operated.

HIMACHAL PRADESH

15. Baijnath temple, Baijnath, District Kangra.— The garden around the monument was well-maintained throughout the year.

JAMMU AND KASHMIR

16. Pathar Masjid, Srinagar, District Srinagar.— The area around the mosque was made presentable.

17. Shankaracharya Temple, Srinagar, District Srinagar.— The garden around the temple has been taken up for its proper maintenance and development. The work is in progress.

KARNATAKA

18. Ambigergudi, Aihole, District Bijapur.— To improve the water supply, P.V.C. pipe lines were laid and connected with the Durga Temple Garden, Aihole.

19. Hoy sales vara Temple, Halebidu, District Hassan.— Coconut plants were planted and pipe lines for irrigation laid.

20. Keshava Temple, Halebidu, District Hassan.— A row of coconut plants was planted along the fencing.

21. Gumbaz-i-Shahi, Ganjam, District Mandya.— An additional 110mm water pipe line has been laid out.

22. Dariya Daulat Bagh, Srirangapatna, District Mandya.— About one hundred and fifty coconut plants were planted around the orchard area, and lotus plants were introduced in the fountain tank in front of the summer palace of Tipu Sultan.

MADHYA PRADESH

23. Group of temples, Khajuraho, District Chhattarpur.— The lawns of the western group of temples were re-turfed and the garden was properly maintained to bring it to a presentable form.

24. Hammam and Fort, Burhanpur, District East Nimar.— The gardens around the monuments were properly maintained and care was taken for their cleanliness too.

MAHARASHTRA

25. Bibi-ka-Maqbara, Aurangabad, District Aurangabad.— Efforts were made to ease scarcity of water by laying pipe lines from the ancient Thatee Nahar.

ORISSA

26. Bhaskareshwara Temple, Bhubaneswar, District Puri.— A pumping set was installed and pipe lines laid. The work of plantation of trees and shrubs was also completed.

27. Magheshwara Temple, Bhubaneswar, District Puri.— The work of laying out a garden including the installation of a pumping set and pipe lines were completed.

28. Sun Temple, Konarak, District Puri.— The area has been fenced with R.C.C. poles and barbed wire for landscaping the sand dunes with period flora and plants suited to the coastal area.

PUNJAB

29. Fort, Bhatinda, District Bhatinda.- The garden around the fort was taken up for its development. The work is in progress.

RAJASTHAN

30. Anasagar Baradari, Ajmer, District Ajmer.- The garden around the monument

was maintained satisfactorily.

31. Deeg Palace, Deeg, District Bharatpur.— The Deeg palace garden and Kachha Bagh area were taken up for further development. Proper attention has been taken to keep it in a presentable form throughout the year.

32. Fort Complex, Chittaurgarh, District Chittaurgarh.— The Padmni Palace garden was kept in a presentable condition. The hilltop area was taken up for development. The work is in progress. Four new gardens have been laid around Jaimal and Fattah House, Site Office Kirtistambh and Khumbha Palace.

TAMIL NADU

33. Brihadesvara Temple, Thanjavur, District Thanjavur.— The garden activities were initiated. The pumping set has been installed and pipe lines laid.

UTTAR PRADESH

34. Ram Bagh, Agra, District Agra.— The entire garden attached to the monument was fully renovated on Charbagh pattern and new beds prepared in the forecourt. *Thuja* and *cupressus* were planted on both the sides of the central path in the inner gardens. A Green way has been imparted by providing lawns besides the central path. In the second row, mass flowering shrubs of the Mughal flora and in the third row, fruit trees were also planted. A wide path all-around the boundary has been laid. The entire periphery was planted with Melinkara elengi plants. The cascades and water falls of the Ram Bagh have been revived.

35. Khusru Bagh, Allahabad, District Allahabad.— A beautiful garden around the monu ments has been laid. *Thuja orientalis* and flowering shrubs were planted.

PUBLICATIONS

PUBLICATIONS OF THE SURVEY

1. Indian Archaeology- A Review.— The issue for the year 1982-83 was published and the one for 1983-84 has been sent to the press.

2. Ancient India.— Numbers 1 to 4 have been reprinted and 9 to 15 are in the final stages of reprinting.

3. Annual Report on Indian Epigraphy.— The issue for the year 1972-73 was publish ed. As a part of the reprinting programme of the Survey, the issues for the years 1887-1905, 1906-10 and 1911-14 were sent to the press.

4. Epigraphia Indica.— Volumes I, II, X, XXVII-XXVIII have been reprinted. Parts I to VII of Volume XL are in the final stages of printing. *Appendix to Epigraphia Indica Volumes XIX-XXIH,* popularly known as Bhandarkar's list was also brought out.

5. Epigraphia Indica Arabic and Persian Supplement.— The issue for the year 1975 has been brought out and the one for the year 1976 has been made ready for the press.

6. South Indian Inscriptions.- Volumes XXI, XXII, XXV and XXVI are in different stages of printing.

7. Corpus Inscriptionum Indicarum.- Part III of Volume VII, *Inscriptions of Paramaras,* is in final stage of printing.

8. Memoirs of the Archaeological Survey of India.— Numbers 79, *Karandai plates of Rajendra Chola* by K.G. Krishnan and 80, *Ratnagiri (1958-61),* volume II by Debala Mitra were published. Number 78, *Lothal,* volume II by S.R. Rao is in its final stage of printing. Satanikota (Memoir 82) by N.C. Ghosh has been sent to the press.

9. Guide Books.- *Sanchi* (fifth edition) by Debala Mitra, *Chola Temples* (fourth edition) by C. Sivaramamurti, *Bhubaneswar* (fifth edition) by Debala Mitra and *Sarnath* (fourth edition) by V. S. Agrawal have been reprinted, and *Nalanda* (sixth edition) by A. Ghosh and *Konarak* (third edition) by Debala Mitra have been sent to the press for reprinting. Besides, two new guide books, *Junagadh* by K.V. Soundara Rajan and *Lothal* by S.R. Rao were

also sent to the press.

10. Picture Post Cards.— Black and white picture post cards on Elephanta and Bagh, Vidisha and Golconda and Hyderabad were printed and a set of coloured cards on Sanchi monuments is in an advanced stage of printing.

OTHER PUBLICATIONS

Himachal Pradesh.— The Department of Language and Culture, Himachal Pradesh, brought out a booklet: *Bhuri Singh Museum, Chamba — An Introduction.*

Rajasthan.— The volumes XIV-XV of *The Researcher* was sent to the press by The Department of Archaeology and Museums, Rajasthan.

Uttar Pradesh.- The State Museum, Lucknow brought out the issue 33-34 of the *Bulletin of Museums and Archaeology,* a picture folder on the Kushana sculptures and a set of ten picture post cards during the year under review.

